

The Canadian Medical Association Journal



Contents

	PAGE		PAGE
ORIGINAL ARTICLES			
The danger of the external use of wood alcohol. By Robert E. McKechnie, M.D.	193	Repair of nose by transferred flap operation with included bone-graft. By Edmund Boyd, M.B., and W. E. Gallie, M.B.	241
A brief consideration of the static labyrinth and ear tests for aviators. By Robert H. Craig	199	EDITORIAL	
A clinical report of one hundred and thirty-one cases treated by artificial pneumothorax. By W. B. Kendall, M.D., C.M., and C. C. Alexander, M.B.	210	Lieutenant-Colonel John McCrae, B.A., M.B., M.R.C.P.	243
The after-history of war nephritis. War nephritis invalidated to England. By A. Roëke Robertson, A. G. Fleming, John C. Calhoun, and Ruggles George, <i>Captains, C.A.M.C.</i>	218	Editorial notes	248
Duct papilloma and duct carcinoma of the breast. By Oliver R. Mabey	225	THE ASSOCIATION	
Rupture of intestines by blows upon abdomen. By J. S. Wright, M.B.	228	The Hamilton Meeting:	
		Letter from President-elect	254
		Preliminary programme	255
		Railway rates	259
CASE REPORTS			
Traumatic rupture of the jejunum. Operation—Recovery. By L. Bruce Robertson, B.A., M.B., <i>Captain, C.A.M.C.</i>	235	OBITUARY	
Report of six cases of tonsillectomy in diphtheria carriers. By C. C. Ballantyne, M.B., <i>Captain, C.A.M.C.</i> , and B. S. Connell, M.B., <i>Lieutenant, C.A.M.C.</i>	238	William H. Jamieson	260
		Dr. William D. Young	260
		Captain John F. Palling, <i>C.A.M.C.</i>	260
		Dr. Austin Ogden	261
		Dr. George Villeneuve	261
		Dr. Catellier	261
		Major J. H. Ratz, <i>C.A.M.C.</i>	262
		MISCELLANY	
		News, Provincial	264
		News, Medical Colleges	271
		News, Army Medical Service	271
		Canadian Literature	274
		Book Reviews	275
		Books received	277
		MEDICAL SOCIETIES	
		Montreal Medico-Chirurgical Society	278

TORONTO: MORANG & CO., LIMITED, PUBLISHERS

ASPIRIN

(MADE IN CANADA)

We manufacture this product and call it by the name which is official in the British Pharmacopoeia, ACETYLSALICYLIC ACID.

By specifying ACETYLSALICYLIC ACID M.C.W. you secure for your prescription a product which is absolutely B.P. and of the highest purity.

MALLINCKRODT CHEMICAL WORKS, of Canada, Limited
MONTREAL

Diarsenol and *Neodiarsenol*

DO you realize that the standards of test for these products are twenty per cent. higher than for the original German products?

SYNTHETIC
TORONTO



DRUG CO.
LIMITED
CANADA

The Canadian Medical Association Journal

VOL. VIII.

MARCH, 1918

No. 3

THE DANGER OF THE EXTERNAL USE OF WOOD ALCOHOL

BY ROBERT E. McKECHNIE, M.D.

Vancouver

THE address of my paper, as seen in the programme, namely, "The use of wood alcohol in surgical cases," is rather misleading, as I do not advocate the use of this dangerous poison at all. Its object, rather, is to add a little to our present knowledge regarding the routes of entrance into the system of this agent, and to furnish a case in which the drug was taken in through an external surface.

The history of wood alcohol is of comparatively recent date. It is one of the products of destructive distillation of wood, hence the name. It was discovered as methyl alcohol in 1812, and has been extensively used in the arts ever since. Owing to its vile taste and odour it was not taken internally, until of recent years, when manufacturers succeeded in eliminating these objectionable features so successfully that it can hardly be distinguished from ethyl or grain alcohol.

The first case of poisoning was reported in 1890, and up to 1894 only three cases had been recorded. But in 1905 Buller and Wood reported a collection of three hundred and fourteen cases of poisoning by wood alcohol, one hundred and fifty-six of which were fatal, and one hundred and fifty-eight with partial or total blindness. Since then many cases have been recorded.

Nearly all these cases of poisoning have occurred in America. In England methylated spirits, formed by adding one part of methyl alcohol to eight of grain alcohol, has successfully competed with the refined American wood alcohol, owing to the reduction

Read at the forty-eighth annual meeting of the Canadian Medical Association, Montreal, June 15th, 1917.

of excise charges on the grain alcohol so used. And as this mixture retains the vile odour and taste of the methyl alcohol, cases of poisoning by the latter are almost unknown. Similarly, on the continent, owing to the cheapness of grain alcohol, used for industrial purposes, cases of poisoning have been very rare, and when they have occurred have been traced to the use of the American product.

The legitimate use of wood alcohol is as a solvent, etc. in the arts, but in America, owing to its cheapness and its refinement, unscrupulous manufacturers have used it in preparing various flavouring extracts, Jamaica ginger, etc., and it has been principally through the use of such preparations that poisoning has occurred.

There are three routes by which wood alcohol can gain entrance to the system, namely, through the alimentary tract, through the respiratory tract, and through the external surfaces.

The first is self evident.

As for the second method, numerous cases have been reported of "poisoning by inhalation". The varnishing of closets or small rooms with closed doors and windows, or of beer vats, or the evaporation or burning of wood alcohol in a confined space, have been responsible for a number of cases of blindness and also a number of cases of death.

As regards the third method I have not been able to find in literature an authentic case, although under this heading Wood quotes one case where a patient had been having wood alcohol rubs, but in addition had taken a dram of the liquid to drink.

This seems a small quantity to have any effect, but people show a decided idiosyncrasy for this agent, some reacting to very small quantities, while others seem immune. In addition, it is very commonly used for alcohol rubs without ill effects apparently, so that I am inclined to think the patient quoted by Wood was poisoned by drinking the small quantity rather than by absorption. Thomas Koller states that even half a dram has been known to poison when taken internally.

The symptoms of wood alcohol poisoning are similar whether ingested, or inhaled. A moderate case will have dizziness, nausea, vomiting and gastro-enteritis, with dimness of vision, often increasing to total blindness. A severe case is accompanied by more or less overwhelming prostration, according to the quantity taken. There will be the usual symptoms of alcoholic intoxication, vertigo, gastric distress, etc., and disturbance of vision.

"The more pronounced cases exhibit headache, muscular

weakness, vomiting, dimness of vision, often progressing to complete blindness, with considerable gastro-intestinal disturbance and evidence of depression of the heart's action."

"A step further and, with the exaggeration of all these symptoms, the patient becomes suddenly blind, or nearly so, with widely dilated reactionless pupils, slow respiration, weak pulse, sweating, delirium or unconsciousness, often passing into coma and terminating in death."

"The characteristic feature in nearly all the severe cases not terminating fatally, is bilateral, total blindness, coming on in a few hours, or perhaps not for several days; then a partial restoration of vision, which again in a few days or weeks gives place to more or less complete or permanent blindness, with atrophy of the optic nerve."

Some of Wood's quoted cases had blindness within forty-eight hours, in others progressing from dimness of vision to total blindness in four to five days, with early stupor, dilated pupils, and red face; some even had chills followed by fever.

The Eye. The organic lesion is an optic atrophy characterized by blurring of the outlines of the optic disc, slight swelling of the nerve head, and congestion of the central vessels of the retina. "Pathologically, two structures are affected in methyl alcohol poisoning—the ganglion cells and the blood vessels, the ophthalmoscopic picture varying according to the structures involved, and to the degree of the involvement.

In the first variety, the ganglion cells are primarily injured, and the injury leads subsequently to an ascending atrophy of the nerve fibres.

The second picture, pale nerve with narrow arteries, must be due to the effect of the poison on the blood vessels, and is comparable to poisoning by quinine and the salicylates.

The third picture, neuro-retinitis with swelling of the nerve heads and enlarged veins is either due to a real neuritis or dependent on altered circulation and pressure conditions within the cranial cavity.

In both these later forms, there is of course, the ganglion cell destruction added to the circulatory disturbance.

As a final result we find ophthalmoscopically a simple atrophy corresponding to the first class, and a neurotic atrophy corresponding to the second and third pictures.

It should not be forgotten that there is a marked cumulative

effect with this drug so that small quantities continuously taken can have dangerous results.

"It has been shown that when reasonable doses are administered to animals the participation of methyl alcohol in metabolism scarcely exceeds 3 per cent. of the total exchange of material in contrast with a more than tenfold participation of ethyl alcohol under comparable conditions.

"Furthermore the elimination of methyl alcohol from the body is distinctly delayed, so that the unconverted residue after a moderate dosage has been given, may fail to be eliminated completely even at the end of two days. Accordingly, if the defective destruction of this substance is considered in conjunction with the delayed rate of elimination, it becomes apparent that the repeated ingestion of considerable doses of methyl alcohol may lead to dangerous accumulations thereof in the body. This fact has heretofore not been duly appreciated."

I have gone somewhat into detail in describing the symptoms and effects of poisoning by wood alcohol, in order that you may have before you the main points, so that you can the more readily compare them with the symptoms of a case which happened in my own practice.

This case, I think you will agree with me, constitutes one in which markedly poisonous quantities were absorbed through an external surface, and affords the first definite case to be recorded of this class so far as my researches go.

My patient, a woman aged forty-five, had received a compound comminuted fracture of the leg, and there had resulted a sloughy non-granulating surface over the front of the leg, which I wished to clean up. This surface was about two by one and one-half inches in extent.

I ordered an alcohol compress to be applied, covered with oiled silk. Up to the date of this application the patient had been doing very well, but after two days' treatment by the compress, she became very drowsy, while after three days' treatment the symptoms were more pronounced. She was still very drowsy, was nauseated at times, and complained of blindness. Respirations were then twenty-eight and very shallow, pulse 88, temperature 97°, face flushed with dilated pupils, suggesting belladonna poisoning, but no thirst. Blindness was now absolute, so that a lighted electric light bulb held before the eyes could not be distinguished. It was recognized as a toxic case, and investigation showed that the alcohol used was Columbian spirits, which is a

refined wood alcohol. This was at once discontinued. But in spite of the discontinuance on the fourth day, the fifth was the most critical. The patient was in a very low condition, pulse 96 and irregular, temperature varying from 100.2° down to 96.6° , rising again to 100° , breathing hurried, and patient almost in a stupor. However, by the next day improvement all around began, and soon she was back to her condition previous to the use of the alcohol. All but the eyes, but here a slight improvement was noted on the seventh day, while on the ninth day Dr. Farish reported as follows on this condition:

Conjunctiva and cornea normal, pupils dilated. Iris sluggish, contracting to light. Lens normal, vitreous normal. Vision, movements of fingers only. Vessels of retina contracted, especially the arteries. The disc uniformly white and outlines fairly distinct. Retina a little blurred, and here and there, especially around the macular region are seen pin point white spots, foci of degeneration.

Diagnosis. Optic atrophy—low grade retinitis. This observation was made over a year ago.

Following this there was a very gradual improvement in sight for some months, until finally a resting stage was reached, at which the patient now is. She can distinguish the form of a person, if the light is good, but cannot tell who it is except by recognizing the footstep or the voice, even at three feet distance. She can feed herself, but not by sight, as she has to feel for the various dishes. And for the last few months has shown absolutely no improvement. But fortunately, so far, the usual relapse into deeper blindness has not been reached, and I trust will not take place.

In this case we had an application of wood alcohol to a raw surface for four full days. The application was covered in with oiled silk, so that the heat of the leg would not cause its dissipation, but rather it would be held in a most favourable condition for absorption. The cumulative effect of the poison is also seen in that the early symptoms were not noted till the second day, and not until the fifth day, the day after the discontinuance of the dressing, was the maximum effect reached. As for the symptoms, they present a complete picture as already described in this paper, of wood alcohol poisoning, viz., marked prostration, more or less stupor, gastro-intestinal disturbance, weakened heart's action, respiratory disturbance; all indicating poisoning by some very toxic agent, and to complete the picture, rapidly

occurring blindness, with improvement to a very moderate degree in this latter symptom on the withdrawal of the exciting agent.

Lastly, Dr. Farish's report showing contraction of the vessels of the retina as well as the nervous lesion, corresponds well with the description of the changes in the eye previously narrated, so that I think I have absolutely proved my point that this was a case of wood alcohol poisoning by absorption through the external surface of the body. And when one comes to consider the comparatively small area through which the absorption took place, it emphasizes the danger of allowing so powerful a poison to be taken into the sick room.

That poisoning can occur by absorption through the intact skin is not yet proven. Crawford described a case in a woman of sixty, who after wood alcohol rubs for two weeks developed dimness of vision, 15-20 in right eye, nil in left, with a grey atrophy of the disc. This is not a usual effect, as both eyes usually suffer equally, but if this is a true case of wood alcohol poisoning by absorption through the skin (it might be by inhalation from repeated rubs on an extensive scale, and also a cumulative effect), but if it is a true case, then this drug should be banished entirely from personal use. We know that it is still extensively used for bath purposes. And it is also in some hospitals used daily by surgeons and nurses for disinfecting hands and arms after the preparatory scrubbing for an operation.

Perhaps this paper will lead to a careful study of its effects and perhaps cases of moderate impairment of vision may be traced to its continued external use. Personally, I am not taking any chances with it, for I have discontinued its use since encountering the present case.

References:

- CASEY H. WOOD.—"International clinics," vol. 1, 1906, p. 68.
CASEY A. WOOD.—"Blindness from wood alcohol"—being American Medical Association's Conservation of Vision Series,—Pamphlet No. XX.
BULLER and WOOD.—"Poisoning by wood alcohol," *Journal of American Medical Association*, October, 1904.
KOLLER,—*Journal American Medical Association*, June 4th, 1910, p. 1866.
Journal American Medical Association, July 20th, 1912, p. 201. Berlin letter.
J. A. CRAWFORD.—*Journal Ophth., Otol. and Laryngol.*, September, 1915; *Ophthalmology*, vol. xii, p. 576.

A BRIEF CONSIDERATION OF THE STATIC LABYRINTH AND EAR TESTS FOR AVIATORS

BY ROBERT H. CRAIG, M.D., F.A.C.S.

MUCH has been written during the past century upon the subject of our position in space and our sense of equilibrium. While a large share of this literature is highly theoretical and based upon incomplete experiments, yet enough exact work has been done to enable us to draw certain accurate conclusions.

The atmospheric pressure at sea level is, as we all know, fifteen pounds to the square inch; as we ascend it diminishes; therefore in order not to jeopardize the lives of our aviators we must know whether their receptive centres are absolutely normal, so that they may retain their equilibrium at any altitude and in any position.

A man standing on the earth maintains his equilibrium not only by ear balance but by sight and muscular sense. Rising in the air and flying in a cloud or in the dark he must depend almost entirely upon his static labyrinth.

It has long been known that the semicircular canals of birds are very highly developed. Lee points out that birds and fish are best suited to experiments on the inner ear because they spend so much of their time in a fluid medium away from contact with a solid supporting surface. These animals have been therefore the favourite subjects for investigators.

To refer briefly to the historical side: Nearly a hundred years ago Purkinje made some interesting experiments with rotation and worked out certain laws accurately, but unfortunately he did not consider the static labyrinth in this connexion.

Flourens, however, in 1828, proved by experiments upon the labyrinth of pigeons that the semicircular canals were positively connected with movements of the head.

In 1870 Goltz showed that equilibration was the result of

Read at the fourth regular meeting of the Montreal Medico-Chirurgical Society, November 16th, 1917.

afferent impulses from peripheral end organs to a central mechanism with resulting efferent impulses to groups of muscles.

Ewald, of Strasburg, in 1892, was the first to prove the function of the semicircular canals. His work with pigeons included the careful introduction of a small pneumatic hammer which touched the membranous canal and was controlled by a bulb at the end of a rubber tubing. By plugging the opening farthest from the ampulla with metal, and compressing the bulb, he was able to cause the endolymph to flow towards the utricle or away from it. He observed that the eyes and head always moved in the direction of the endolymph flow and in the plane of the canal which was stimulated.

We learn therefore, from Ewald's experiment, that the greater physiological impulses are produced in the horizontal canal by the movement or impact of the endolymph from the smooth or nonampullated end of the canal toward the ampullæ and utricles. Whereas the stronger physiological impulses from the crista of the superior and posterior canals are produced by a flow of endolymph in the reverse direction, namely, from the utricles through the ampullæ to the smooth or nonampullated end of the canals. We now believe that each crista is a double end organ and that each emits nervous impulses antagonistic to the other half.

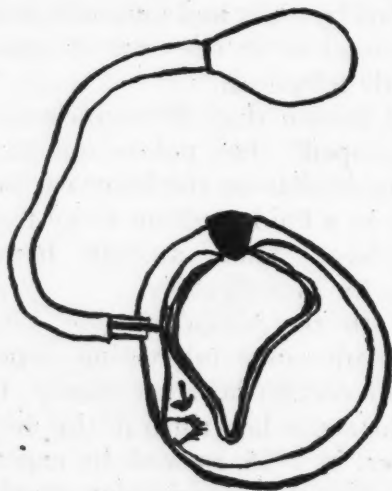


Diagram illustrating Ewald's experiment on pigeon with pneumatic hammer

Lee, of Columbia, experimented with sharks and found that if both anterior ampullæ were divided the fish dived downward; on

section of the nerve of both anterior ampullæ, the fish swam upward, sometimes putting its head out of water.

Kubo reached some complete and accurate conclusions resulting from experiments on the semicircular canals and vestibular sacs of fish in the zoological station in Trieste in 1905 and 1906.

His experiments on deviations of the eyes and the otoliths of the vestibular sacs are particularly interesting.

Kubo experimented first by holding the fish in various positions. He discovered that the eyes invariably turned in certain directions—for example, holding the fish head downward the eyes rotated upward.

He then exposed the membranous sacs to view and observed the gliding movements of the otoliths. He found that they glided in a direction corresponding to the movement of the eyes.

He next manipulated the otoliths with a small cotton-protected probe and was able to control the rolling of the eyes. Thus the artificial movements of the otoliths produced reflex deviation of the eyes exactly similar to those caused naturally by changes in the position of the head.

Experiments with partial or total extirpation of the otoliths proved that interference with the otoliths affected the reflexes on the same side.

Kubo after giving due credit to the many preceding experiments observes that: "Also with fish every body position corresponds to an exact eye position and when the otoliths are removed or the entire vestibular apparatus is destroyed this relationship is lost."

George Washington MacKenzie has written extensively upon this subject and his learned book and numerous original papers have helped materially to blaze the trail into this newly discovered domain.

Professor MacKenzie examined a large number of selected cases of deaf mutes and concluded that the function of the semicircular canals has to do with the perception of turning movements while the function of the utricle and saccule are both static and dynamic. Static—for the perception of position in space, and dynamic for the perception of straight lines, so long as the movement is increasing or diminishing in velocity.

All the experiments of these physiologists and many others have confirmed Flourens's early observation that the vestibular apparatus is a special sense organ and is solely concerned with orientation and equilibration. The physiological connexion of

the vestibular apparatus with the sense of sight, the kinesthetic sense (muscle joint sense) and the tactile sense cannot be too strongly emphasized. Duel goes so far as to say that these connexions are far more intimate than its relationship with the auditory nerve (but I cannot quite agree on this point). As the closeness of these relationships has not been generally appreciated, I should like to call special attention to it. Duel states that the eighth nerve should be described in anatomy and physiology as the nerve of hearing only, with its end organ, the cochlea. The vestibular branch should be given its own place. It is the nerve of orientation and equilibrium with its end organ the vestibule and semicircular canals. It is the perfected development of the primitive stiffened tentacle of the jelly fish, the calcareous particles (otoliths) of the higher forms up to the more elaborate vestibular apparatus of the vertebrate.

In the perfectly normal individual the conception of position is the result of the harmonious assembling of all the afferent impulses. The sense of our position in space (orientation) and our adjustment to it or balance (equilibration), are more essential than any other sense. Without sight, hearing, or smell we can get along, but with impaired sense of position or balance, life is not worth living.

The jelly fish deprived of his stiffened tentacle falls inert to the bottom. A dog without his vestibular apparatus is at first helpless but assisted by intelligence and his other senses, he learns to walk, eat, and run. If, however, he jumps from a small height he falls in a heap, or if thrown in the water he sinks immediately. Without a sense of balance in an unusual environment he is lost.

When a man is deprived of his labyrinth by sickness the opposite labyrinth and the other senses come to the rescue and usually there is time for adjustment. If the deprivation of one vestibular apparatus is sudden he is temporarily very much upset. He has violent vertigo, and also illusions of motion in which his eyes follow an object until it apparently moves out of sight, and then snap back and repeat these oscillations or nystagmus. His motions are, of course, extremely uncertain. These symptoms, however, subside in a few days and in a few weeks the ordinary acts are easily performed. So a man losing one eye sees everything first flat, and when he gazes attentively at an object it becomes blurred. A man becoming deaf in one ear cannot locate the direction of sound until he learns to move his head slightly to get two different angles.

We all know the illusion of watching another train moving while ours stands still. Our sense of orientation easily corrects this by closing our eyes for a moment, or looking at an upright object in our own car.

It would be quite possible for an aviator who had no static labyrinth to guide an aeroplane with ease while the earth below was visible, but let him fly into a cloud—without his sense of equilibration and orientation he would in all probability become utterly confused. We do not realize how much we depend upon this sense.

Jones, of Philadelphia, in a recent paper on the subject states that experienced aviators are invariably found to possess a normal vestibular apparatus and are enthusiastic about the Barany tests. One man who has flown for fifteen years says he remembers three fatal falls which could be attributed to no apparent causes but were probably due to faulty ear balance.

A doctor who had been giving the tests underwent them himself and was dismayed to find that he had complete lack of ear balance after trying the caloric and turning tests, past-pointing and falling. The trouble was directly traceable to ear complications of mumps in childhood. The only previous suggestion was that he had never been sea-sick. He was made to realize that without the Barany tests he would not have known of this lack and might have paid for it with his life.

The standardization of these tests is a matter of great importance in order that a prospective aviator may not find the tests in one place easier than in another. In the United States a number of otologists have been given an intensive training in this work by expert military specialists. They have now formed thirty centres in various parts of the country where the work is done in precisely the same way. Decisions of these trained specialists are final.

Let us now consider briefly Barany's findings.

In the normal individual in response to certain physiological stimuli or tests we invariably see reflex movements of the eyes, or nystagmus; and of the body and limbs, or reaction movements.

Increase or diminution of these reflexes in response to stimuli indicate an increased or diminished irritability of the semicircular canals.

Hunt in discussing Duel's masterly paper on this subject says: "A proper understanding of their detail and technique is essential for the interpretation of the various disturbances of

labyrinthine tonus, for the differentiation of vestibular affections of central and peripheral origin, and in cerebellar localization. The labyrinthine tonus is a homolateral mechanism in its influence, namely, the right labyrinth and right cerebellum control the corresponding half of the body. As a result of these observations Barany reached the important conclusions that in the cerebellar cortex, the various segments (joints and muscles) of the extremities are represented by four centres which are concerned with the direction movements, namely, horizontal (right and left) and vertical (up and down). A stimulation of the labyrinth on one side induced a corresponding alteration of tonic innervation in the direction of the movement.

Barany has elaborated with great detail and exactness a number of tests for the determination of this tonus mechanism of the labyrinth and its influence on the movements of the extremities and trunk.

It is important to recognize that vertigo and ataxia are due to disturbances of the vestibular mechanism, peripheral, central or psychic, and that clinically we should always think of vertigo in this concrete neurological sense."

There are four different tests as worked out by Barany.

1. By irrigation of the ear with hot and cold water—the caloric test.
2. By means of the galvanic current—the galvanic test.
3. By compression or aspiration of the auditory canal—the fistula test.
4. By rotation—the rotary test.

The caloric test consists in syringing the ear with hot and cold water. In the normal person water introduced at body heat produces no reaction. When cold water is introduced there follows a rotary nystagmus in which the quick movement of the eyes is away from the ear irrigated. The patient experiences subjective vertigo and exhibits marked disturbance of equilibrium.

When hot water is introduced we see exactly the same phenomenon except that the direction of the nystagmus is directly opposite or toward the ear irrigated. When cold water is introduced if the head is bent forward and downward at an angle of 90°, the conditions are reversed and the nystagmus is toward the ear under treatment. With warm water, also, when the head is bent forward, conditions are opposite and the nystagmus is away from the irrigated ear.

These reactions are nearly invariable with normal persons. When the vestibular apparatus has been destroyed the nerve can no longer respond to heat and cold and the caloric reactions are absent.

Barany ascribes the reaction to endolymph movement produced by difference in the specific gravity of the cold and warm portions of the endolymph. Time will not allow a more detailed explanation of this test.

The galvanic test, while it also enables one to test each labyrinth separately, may excite reactions by stimulating the vestibular nerve trunk and is therefore not as reliable as the caloric or rotary tests. "Reports of galvanic irritation both in health and disease have been so contradictory as to leave its diagnostic value in considerable doubt."

The fistula test is seldom used except in certain special selected cases as it may possibly set up inflammation and has no diagnostic value unless it is positive. The application of the fistula test, if a circumscribed labyrinthitis is present, may result in diffuse inflammation and meningitis. The pneumatic pressure necessary to bring about the reaction does not fit all cases and is now considered by many authorities to be too dangerous for routine practice.

The rotary test is best indicated for testing an apparently normal subject. It is rather a violent procedure for a patient suffering from acute labyrinthine disease. It has been generally adopted by the army officials as the best possible test for aviators and is now used entirely, having superseded the caloric test, as the quickest, surest and easiest of application in determining the entire function of the vestibular apparatus.

In rotation when the head is held in the erect position and suddenly turned in the horizontal position the endolymph at first lags behind in the two horizontal canals by reason of its inertia, that is, it is displaced in the opposite direction. If for example in the head is turned to the right the initial endolymph movement in the right horizontal canal will be toward its ampulla—while in the left horizontal it will be toward the small end of the canal.

Now, according to Ewald's experiments, these are precisely the endolymph movements which in these canals should produce nystagmus to the right, and this phenomenon is always present during rotations to the right. When the rotations are suddenly stopped, the endolymph this time by reason of its momentum, is displaced in the opposite direction with the result that the direction

of the nystagmus is reversed, that is, it is now to the left. During rotation we may by changing the position of the head bring different canals under the influence of the experiment, and thus vary at will the form of the nystagmus. In all cases, however, the nystagmus follows a definite rule, namely, during rotation a person exhibits nystagmus in the direction in which he is turned. When the turning is stopped, nystagmus in the opposite direction immediately follows.

I can do no better than to give you the official United States aviation tests which are of paramount interest to us all.

The tests themselves are as follows:

Ear Determination

"Hearing should be normal for each ear. To determine this both the whisper and watch tests are used. After examining both external auditory canals and membrani tympani by means of a speculum and good light (first removing any wax if present) for abnormalities such as a small and tortuous opening, presence of pus, perforation scars, retraction, or other evidence of past or present inflammation, which are causes for rejection, the candidate is required to stand at twenty feet from the examiner and facing away from him. An assistant closes the ear not under examination with his moistened index finger, pressed firmly into the external auditory meatus. The examiner facing the back of the candidate exhales and then, with his residual air, whispers numbers, words, or sentences which the candidate should repeat. The other ear will then be tested in a similar manner. If unable to hear, the examiner will approach until the candidate does hear, the distance being recorded in feet. If less than twenty feet it is a cause for rejection. A quiet room is essential.

The watch test is preferably made with a loud ticking watch such as the ordinary Ingersoll which, while variable, should be heard at about forty inches. Any watch used should have been previously tried out on at least five normal persons and the distance heard made a matter of record. The number of inches in distance heard by the candidate, eyes closed and opposite ear occluded, is taken as the numerator and the distance the watch should be heard as the denominator. This should be the equivalent of 40-40; otherwise disqualifies.

Naso-Pharynx

This region should be carefully examined. If defects can be removed by operation, this should be required prior to completing the examination. If nonoperable or operation refused, it is a cause for rejection.

Static Tests

The erect position should be maintained for one minute without marked swaying. Eyes closed.

Equilibrium (Vestibular)

The observer first looks for a spontaneous nystagmus or twitching of the eyes looking straight ahead or in any direction.

Rotation nystagmus is determined by placing the candidate in a revolving arm chair of a standardized pattern with head and foot rest, the head is tilted backward and eyes closed. Revolve the patient towards his right ten times in exactly twenty seconds. The candidate is stopped suddenly, facing the examiner in a good light, and told to open his eyes and look straight ahead. The eyes will be seen to be oscillating; the quick component, which is the movement most easily seen, will be in the opposite direction to the turning, namely, to the left. The number of seconds duration will be noted. The test is then repeated, turning him to the left. Nystagmus will now be to the right. In each case it should last about twenty-six seconds. A variation of ten seconds either way is allowable. The nystagmus is the result of stimulation of the horizontal and anterior semicircular canal and is therefore rotary.

Past-Pointing

The patient sits in the chair, eyes tightly closed, and faces the examiner and touches the examiner's forefinger in front of him, raises the arm in the perpendicular position and attempts to find the examiner's finger, both right and left. Normally, the person will always find the finger. The patient is now turned ten times to the right for ten seconds, the chair is locked in position and the person to be examined told to touch the finger in the same manner, right, left, right, left, right, left (three times). Normally the finger will point to the right, the past-pointing will be less each time it is tried, and on the fourth turn the finger should be touched accurately.

The same experiment is then performed by turning to the left the patient always past-pointing in the direction of the turning. Finally the head is inclined 90 degrees downward and the patient turned to the right five times in ten seconds. On stopping, the patient raises the head, and he should then fall to the right. These test the vertical semicircular canals. He is then turned to the left in the same manner and falls to the left.

Braun and Friesner state: "All the centripetal impulses, whose purpose it is to maintain our equilibrium, are gathered together in the cerebellum, so that the latter may be considered, in a sense, the centre for the static labyrinth. There probably is no single, definite (static sense) centre upon which all of the centripetal impulses exert their influences. The cerebrum must play a very subordinate rôle in this static sense, however, for it has been entirely removed in dogs without causing any loss of equilibrium. On the other hand, removal of even half the cerebellum results in very decided loss of balance.

"The cerebellum may be considered as a sensory-motor subcortical central organ. It receives centripetal impulses from the static labyrinth, sensory impulses from the muscles and joints and visual impulses from the eyes, and it sends out motor impulses to the muscles of the head, trunk and extremities, the purpose of which is to maintain the equilibrium of the body.

"All of the motor impulses, however, which have for their purpose the maintenance of the body equilibrium, do not originate in the cerebellar cortex. The impulses which arouse these movements, however, pass through the cerebellar cortex on their way down to the spinal cord. In the cerebellar cortex they meet the centripetal impulses from the static labyrinths, the muscles, the joints and the eyes, and are there acted upon in such a way as to become effective in maintaining the equilibrium of the body."

We know that we keep our balance upon the earth's surface by the working out of certain immutable laws which after a hundred years of research we are beginning to observe with more understanding. It has occurred to me whether it may also be possible that this old earth of ours, suspended in space, is held in its orbit by the great changing waters responding to the laws of gravitation. They move in mighty masses as tides, as floods, as over-flows and by the turning of little creeks to mighty rivers when the snow melts. Can it be that these incomprehensible fluid changes occupy the same place on the earth's balance power that the endolymph fluid fills in the body of a man? We know

that there is three times more water than land, most of it constantly moving. Perhaps the continents and islands act as the otoliths do in our bodies and all respond to the electro-chemical changes brought about by the sun's rays. It seems to me reasonable to suppose that the same principles that govern the earth are maintained in the individual.

My lamented friend and professor who was always an inspiration of the highest professional ideals to me, the late Doctor T. Wesley Mills, was deeply interested in orientation and equilibration and did considerable original work on the semicircular canals of pigeons. It is to be regretted that he could not have lived to see the present day development of this work.

We are always hoping that at last we may come within range of an understanding of the vast harmony composed of all the vibrations governing not only the laws of music and sound to delight our ears, but controlling our every motion and even life itself, as well as those great things beside which we are but atoms. Small though we may be we have been given minds capable in some degree of comprehending this wonderful music of the spheres. When we have learned to attune ourselves and eliminate the discordant notes in our own lives, then life shall take on a new and more beautiful meaning, and wars, in the nature of things, will be no longer possible.

In all this work the ophthalmologist, internist, and neurologist are indispensable working companions with the ear specialist.

Together, in the interest of our profession, we may follow the path of Ulysses in which he describes himself as:

"This grey spirit yearning in desire
To follow knowledge like a sinking star
Beyond the utmost bounds of human thought."

BIBLIOGRAPHY

GEORGE WASHINGTON MACKENZIE.—"Labyrinth papers."

BARANY.—*Physiologie V. Pathologie des Bogen Appar. beim Menschen*. A monograph, Wien, 1907.

DUEL.—"Orientation and equilibration," *New York Medical Journal*, March, 1916.

DUEL.—"Suppurative labyrinthitis," *Boston Medical and Surgical Journal*, March 8th, 1917.

BALLENGER.—"Diseases of the ear, nose and throat."

JONES.—"The ear and aviation," *The Journal of the American Medical Association*, November 10th, 1917.

BRAUN and FRIESNER.—"The labyrinth."

A CLINICAL REPORT ON ONE HUNDRED AND
THIRTY-ONE CASES TREATED BY
ARTIFICIAL PNEUMOTHORAX

BY W. B. KENDALL, M.D., C.M.

AND

C. C. ALEXANDER, M.B.

Gravenhurst, Ontario

I HAD an opportunity of presenting a brief paper on the subject of artificial pneumothorax during the meeting of your association at St. John in July, 1914. At that time we had under consideration but twenty-one cases.

During the past three years we have increased this number to one hundred and thirty-one cases; and I wish now to consider the clinical findings so far presented.

The efficacy of this form of treatment depends mainly upon the degree of functional rest that can be established and maintained in the compressed lung, and the lessening of toxæmia by the discharge of the tuberculous foci. Each case, of course, must be viewed and treated on its own merits.

We have up to the present time attempted treatment in advanced cases, some moderate, others far advanced; in fact, we have but one incipient case among those under consideration; the compression in this case being established to control an apparently untreatable cough. We cannot help feeling pleased, although perhaps not satisfied, that the results obtained are so favourable, when we consider the class of case under consideration and the almost hopeless outlook presented under sanatorium treatment.

Our experience has been that the cases in an institution do better than those at home.

REASONS FOR ATTEMPTING ARTIFICIAL PNEUMOTHORAX

(a) *Lessening the toxæmia*, and by so doing, the distressing symptoms caused thereby. We refer more particularly to fever, night sweats, expectoration, loss of weight and the control of cough.

Read before the Canadian Medical Association, Montreal, June 13th, 1917.

(b) *Splinting the lung*; and by this immobilization, impeding the means of spreading infection through the blood and lymph streams.

(c) *Control of hæmorrhage, when present.*

(d) *Psychological effect.*

REASONS FOR NOT ATTEMPTING ARTIFICIAL PNEUMOTHORAX

(a) While we feel that the theory regarding artificial pneumothorax is sufficiently logical to warrant precise results; we have, up to the present time, felt it unwise to treat those who have every chance of doing well under ordinary measures of treatment; and we always keep in mind the question of remote complications which might occur. Chief among the latter, and in fact the only complication of great importance is the formation of pleural effusion. We would not advise artificial pneumothorax in chronic fibroid cases, unless hæmorrhagic; while we have considered a tuberculous involvement in the bowel and kidney, diabetes, a serious heart lesion or arterio-sclerosis as among the complicating factors which militate against the use of this measure.

CLASSIFICATION OF CASES

Our experience has led us to consider artificial pneumothorax as being indicated in progressive and stationary cases, or in patients suffering from hæmorrhage, and we have classified our observations in accordance with results expected as:

(a) *Curative.*

(b) *Palliative, and as an ultimum refugium.*

FACTORS CONSIDERED BEFORE ATTEMPTING ARTIFICIAL PNEUMOTHORAX

(a) *Chest involvement.*

1. *Bilateral or unilateral.*

While promising results are more likely to be obtained in strictly unilateral cases, our statistics show that 71 per cent. of our cases had involvement on both sides of the chest. While it is essential that adequate compensation be established, still it is quite possible, in many cases, to obtain favourable results in bilateral cases. Although our findings will not support the supposition that the collapse of one lung produces a beneficial and curative result upon the disease in the other lung; still a lessening

of activity has been noted in some cases in the less diseased side of the chest.

2. *Side compressed.*

Compressions have been made on the right side in 42 per cent. and on the left in 58 per cent. of our cases. We have found no particular difference in the ultimate results although there may be more immediate effects on the heart action, respiration, and digestive system with left sided compressions.

3. *Age.*

We have not had an opportunity of treating children, while the age of treatable cases has not been in any way a factor worthy of consideration.

4. *Duration of disease.*

Most pronounced results have been obtained in the more progressive than in the chronic fibroid type.

5. *History of previous pleurisy.*

The question of a history of pleurisy has had no bearing upon the results of pleural space inflation; in some cases marked pleuritic adhesions were met with where no history had been given and vice versa. Diaphragmatic adhesions are likely to give most trouble.

(b) *The use of x-ray.*

Fluoroscopic and radiographic examinations should be made in all cases. In 75 per cent. of our cases the x-ray was used; but in some cases we were able to find a partial or complete pleural space which the röntgen ray did not reveal. Pleuritic adhesions are never entirely absent in advanced tuberculous lung conditions, so that we feel that puncture attempts should be made in selected cases, no matter what the physical or röntgen examination findings may be.

(c) *General condition of patient, including symptoms before operation.*

In most advanced tuberculous cases a condition of general malaise is usually presented including a loss of weight and strength. With this we find cough and expectoration present, and the results of toxæmia such as fever, night sweats, secondary anæmia, etc.

IMMEDIATE AND ULTIMATE RESULTS EXPECTED

After collapse, in so far as symptoms are concerned, we find that the cough and expectoration may be more troublesome; but this is followed by a marked decrease. Lessening of fever is usually noted within the first seventy-two hours and there is a

definite and continuous improvement in the patient's general condition. With the improvement of symptoms there is a marked change in the patient's mental attitude. Patients are always willing and anxious for further treatment. This is not only due to the relief of symptoms but also to a stimulating psychological effect.

TECHNIQUE

(a) *Preparation of patient.*

The intercostal spaces are rendered wider by placing a small soft pillow under the axilla. The skin is thoroughly painted with tincture of iodine, and the skin and parietal pleura anæsthetized with a 1 per cent. solution of novocain. We used morphia in a few early cases but do not advise it. In two cases we resorted to the assistance of ethyl chloride.

(b) *Preparation of operator.*

The hands and arms after being thoroughly scrubbed are immersed in a solution of lysol. We have made 2,383 punctures, without an appearance of sepsis.

(c) *Instruments and their preparation.*

We used a 1 c.c. Record hypodermic syringe with a small bored short needle for anæsthetizing purposes. We have used and discarded the Saugman and many other needles especially made and advised for artificial pneumothorax, and use one made of platinum, two inches long, of medium bore, and with a blunt non-cutting point. This needle is used for initial attempts as well as for refills. Where the tissues are particularly resistant, a needle with a sharper point can be made use of. All needles are fitted with ordinary wire stiletos. A piece of small sized rubber tubing, fitted at one end with a glass tube, is used for connecting the needle with the larger rubber tubing of the pneumothorax apparatus. This small tube and all instruments used are boiled before use in each case, and kept in alcohol until used.

(d) *The location of puncture.*

We have found the post-axillary line preferable, although the exact location will depend on adhesions. The lower the puncture the better, in order that diaphragmatic adhesions which are the most difficult to deal with can be peeled off or loosened.

(e) *Mode of puncture.*

We have found it best to make a puncture in the skin and subcutaneous tissue just below the upper edge of the rib; having the needle rest upon the upper part of the latter, anæsthetizing the parietal pleura first and the skin last. We find that making a

puncture in this way a valve effect is produced, thus preventing to some extent the occurrence of surgical emphysema.

(f) *Gas.*

A small amount of oxygen is used in the first fill, 100 c.c. being sufficient, this followed with nitrogen or filtered air. The entire initial inflation is made with an amount not exceeding 500 c.c. In cold weather it is best to warm the gas by having a part of the rubber tube immersed in hot water.

(g) *Pressure.*

We resort to water pressure only, this pressure being somewhat different in the four machines we have in use, owing to the style of the machine and the size of the glass containers. We never use bulb produced pressure. The gas is never allowed to enter the chest until we are satisfied with our manometric readings, and until we have fitted the shank of the needle with a Record syringe and assured ourselves that the needle is in the pleural space, and not adjacent to it in the lung or in a blood vessel. The inflation should be made slowly and pressure not increased too rapidly.

COMPLICATIONS WHICH MAY PRESENT THEMSELVES.

(a) *While operating.*

The patient may complain of pain, this may be reflex, may be caused by the breaking down of adhesions or through pressure. If from the latter this fact will be readily noticed from the manometric readings. If the pain is severe or if convinced that adhesions are present and but a small pleural pocket is being filled, the operation should be discontinued. Gas embolism is possible but is not probable, if due precautions are taken to avoid it.

Pleural shock has been cited as a complication during the operation, but proper and thorough anæsthetization of the parietal pleura will prevent this. We have had to discontinue treatment in a few cases on account of pain, but we have had no occurrence of embolism or pleural shock.

(b) *After operating.*

Dyspnœa. The patient may be distressed through shortness of breath, although this is not frequent, and need not be, if the operator is careful in noting the readings on his manometer and thus determining the size of the pleural space, and the degree of mediastinal rigidity. Skin sepsis may occur, but if so carelessness is the cause.

Some patients have no desire for food after the first few com-

pressions, more especially left sided cases; although in the majority of cases no such condition is experienced if the amount of gas is not too great.

(c) *Surgical emphysema.*

Some few cases of superficial emphysema were observed as well as two cases with gas around the mediastinal tissues and higher up in the tissues of the neck.

(d) *Pleural effusions.*

We consider the formation of fluid to be the one serious complication that can occur during treatment by artificial pneumothorax.

Effusions have been formed in twenty per cent. of our cases. Most of these have occurred after six months' treatment, mostly in cases with marked cachexia and particularly those who have indulged in considerable activity.

Although many theories have been advanced, no definite cause has been assigned. Our impression is that the cause is mainly infection from within and has been more frequent in those of a cachectic type, with acute ulcerative processes or with an acute mixed infection present. Our experience has also led us to believe that patients indulging in sudden unaccustomed exercises are more prone to develop pleural effusions, and also that large inflations at high pressure have been determining factors.

In the majority of cases the fluid is apparently sterile at first but gradually becomes purulent and in most end cases the tubercle bacilli can be demonstrated.

The amount varies in individual cases. In four of the twenty-six cases in which fluid occurred, the amounts were small and did not recur after one oxygen refillment.

We have used oxygen refillments in some cases in an endeavour to assist fluid absorption.

FREQUENCY OF REFILLS.

The frequency of refills depends upon several factors and these briefly stated are:

(a) *Absorption.*

1. This will differ in each individual case while the reason is not explainable.

2. Activity of patient. The gas will be absorbed more rapidly in those patients who are active than in those who are on rest.

3. Atmospheric conditions. In cold weather the gas is absorbed more readily.

(b) *Amount of gas.*

1. This will depend on the variation of pressure and in accordance with the process of absorption.
2. Moderate amounts of gas are advised. We very seldom exceed 1,000 c.c. while the average amount is 500 c.c.
3. The amount of gas will vary in each individual case.
4. We never exceed 500 c.c. of gas (N and O combined) in first operation.
5. Frequent refills at short intervals are preferred to large refills at greater periods, as in this way more complete compression can be sustained.
6. Reference should be made to a skiagram, or the fluoroscope made use of in determining frequency and amount of refills.
7. No definite degree of absorption of nitrogen can be depended upon. This will vary with the case and the stage of treatment.
8. Treatment should be continued indefinitely or until convinced that complete fibrosis has developed.

POSITION OF MEDIASTINUM

Varying degrees of mediastinal mobility is noted in different cases, and this will be affected by adhesions. These adhesions may be diaphragmatic in character or established in the upper part of the pleura or around the mediastinal glands. While the manometric readings may be of some service as a guide, we have not found them to be of positive value as an indicator.

X-RAY PLATE AND SKIAGRAM READING

Some means of measurement is required in order that we may get definite readings. To aid us in this matter we are now using a special ombrometer and scaled chart recording fluoroscopic findings.

SUMMARY

- (a) Artificial pneumothorax is of value not only as a palliative measure but also as a curative one.
- (b) Although unilateral cases promise the best results, a moderate bilateral involvement does not contraindicate.
- (c) Cases treated in a sanatorium give the best results; but this is not an absolute necessity.
- (d) The skiagram and fluoroscope are essential.
- (d) A small initial fill, not exceeding 500 c.c. of gas, and subsequent frequent refills not exceeding 1,000 c.c. are points of importance.

THE AFTER-HISTORY OF WAR NEPHRITIS

WAR NEPHRITICS INVALIDED TO ENGLAND

BY A. ROCKE ROBERTSON, *Captain, C.A.M.C., MEDICAL DIVISION*
A. G. FLEMING, - *Captain, C.A.M.C., NEPHRITIC WARD*
JOHN C. CALHOUN, *Captain, C.A.M.C., LABORATORIES*
RUGGLES GEORGE, *Captain, C.A.M.C., EYE, EAR, NOSE*
AND THROAT

*The Duchess of Connaught Canadian Red Cross Hospital
Cliveden, Taplow, Bucks*

THERE have been published a number of excellent papers upon war or trench nephritis as it occurs in France, but the question of what eventually becomes of the patients has not been clearly worked out. The condition is usually regarded as a comparatively mild form of acute nephritis, and it is probably true that the majority of cases occurring in France and Flanders recover sufficiently in rest camps or field ambulances to permit of their return to the line. A minority of cases, those in which there is pronounced dyspnoea or extensive œdema, find their way into base hospitals in France, and here they are treated until those symptoms have abated or disappeared, and then are returned to England for further treatment. Of these a few are already free from albumin, casts and blood, but by far the greater number still afford traces of these pathological elements in the urine.

The present investigation was commenced by Captains J. D. Bruce and A. R. Robertson in the latter part of November, 1916, when a special ward for nephritis was opened. Captain Bruce, unfortunately, left shortly afterwards, and the work was then carried on by the writers; with the purpose of ascertaining the after-history of these cases.

To Captain Bruce and also to Colonel Rudolf, our thanks are due for many helpful suggestions.

While it is true that the mortality in acute stages is practically nil (any death that has occurred among such seeming almost

Received for publication June 5th, 1917.

always to have been due, not to a primary condition, but to exacerbations of an old nephritis), it is evident from the observations here recorded that the great majority of patients ill enough to be sent to England are still far from well at the end of three months. It is now necessary, we would suggest, that a further study be made of the condition of this class of patients at the end of say six months, and of a year.

We have been able to investigate a considerable number of these cases and for the purpose of this communication have subjected fifty to a detailed study—after a lapse of from two to three months or more from the onset. We have tried, by careful questioning as to the exact mode of onset and subsequent course in France, to ascertain what manner of case it is that fails to clear up quickly and tends to lapse into a sub-acute or chronic condition; this has revealed some interesting facts.

In our fifty cases we find that the average period of service in France was five and one-half months, that forty-three had done duty in the front line—either in trenches or gun positions—and that seven were never at any time in the front line,* but were on duty either at a base or only as far up as a rail-head. As to past illnesses, nine had had scarlatina in childhood, followed in one instance by severe nephritis; thirteen had had measles with no serious sequelæ, five had pneumonia, and five had rheumatic fever. In three cases there was a clear history of syphilis, which in two patients seems to have had some bearing upon their present condition.

All claimed to have been in perfect health upon arrival in France. All ate the same food and with the exception of three, who admitted having drunk trench water when other was not obtainable, stated that they had used only the water that was served out. It is, however, entirely probable that most soldiers at some time use trench or shell-hole water.

The most frequent initial symptom was acute catarrh of some part of the respiratory tract—trachæo-bronchitis in twenty-seven, coryza in twenty-three and "sore throat" in seventeen. Rarely the entire tract was involved. Accompanying this, but usually following a short time after, was weakness and malaise in forty-four, and chills in twenty-five cases. Some degree of fever was probably present in all cases, but from the patient's own statement a history was obtainable only in twelve. Following this came dyspnoea in forty-

*Hence our preference for the term "war nephritis".

seven cases—in forty of which, it occurred in bed. Dyspnoea was also a fairly frequent first symptom. Then came œdemas of varying degree in forty-nine cases, occasionally only as a slight swelling under the eyes, or of the feet. In order of onset, œdema first occurred in the face and under the eyes; then in feet and hands. Accompanying, or often preceding the œdema, was headache of varying intensity in thirty-seven cases—of post-ocular or supraorbital character in twenty-five and occipital in three. In twenty-nine the headache was dull and constant, in nine it was sharp and lancinating. The commonest pain elsewhere was across the small of the back in forty cases, in the muscles of the legs in thirty-two. Abdominal pains were not infrequent, usually epigastric and of a cramping character in sixteen; in thirteen there were joint pains and in nineteen pains in the long bones. Nausea and vomiting was present in twenty-six cases. Vertigo, in thirty-one cases, was also quite frequently an initial symptom. Other symptoms that frequently followed were—loss of weight in twenty-five, insomnia in thirty-seven, anorexia in fifteen, diarrhœa in nine, constipation in eleven, profuse sweats in eighteen, dryness of skin in twelve, mental torpidity in ten, convulsions in three, and partial or complete unconsciousness in five. Visual disturbances occurred in eighteen, in one of which there was complete blindness, except for perception of light, over a period of about two weeks. Blurring of vision was the commonest occurrence and usually came on with the onset of œdema of the orbital tissues. Objects could be seen but their outline would be indistinct as would be the case in errors of refraction. In one case the patient volunteered the information that, whereas in good health he had always had to use glasses for reading, he was able to read quite easily during the time that orbital œdema was marked. It seems possible that a change either in intra or extra-ocular pressure, due to œdema of the eye or the orbital tissues temporarily altered the refraction of the eye.

The ocular changes that may have been present during the acute phase of our cases were probably those that have been commonly noted in France—œdema of the retina and the disc, phenomena which were occasionally noted in those that entered with œdema, or those in which œdema subsequently reappeared.

The commonest complaint upon entering this hospital was dull frontal headache, usually present upon awakening in the morning, and passing off towards mid-day. Accompanying this were pains across the loins, deep seated, dull, sometimes unilateral but usually bilateral and occasionally radiating downwards to-

wards the pelvis. It was not observed that the degree of pain bore any relationship to small fluctuations in the amount of albumin and blood (usually small) present in the urine. Dyspnoea on exertion has been a constant subjective symptom in all cases with one exception. That this is often real is amply borne out by the fact that some of the patients doing light duties on the ward become dyspnoeic very quickly. In a few cases a transient dyspnoea would cause the patient to "start" with a smothering sensation out of deep sleep; such nocturnal attacks have, though, been rare and transient. However, the fact remains that the dyspnoea is even after two or three months from onset of the malady, such a constant subjective symptom that we have been endeavouring to ascertain to what extent this subjective symptom is confirmed by means of physical exercise tests. We have selected only those cases in which "shortness of breath" on exertion was a voluntary statement on the part of the patient, in no wise elicited by questioning. The patient was told that the physical exercise tests were of the nature of "pulse tests". Sufficient observations have not as yet been made from which to draw definite conclusions, yet we feel fairly sure that much of the dyspnoea in patients who have been free of oedema and high blood pressure for some weeks, with urine almost or entirely free of albumin and blood, is psychic or functional in character. It is well known that after recovery from nerve-paralysis following an injury there is often a greater or less amount of functional disability due to the patient's own impression that he cannot now use the muscles supplied by that nerve.

In a precisely analogous way it is possible that in many of these nephritics the early pathological dyspnoea is succeeded by a purely functional dyspnoea. Our observations upon this subject will be given in a further communication.

In all cases that we have examined after a lapse of three months we have found no enlargement of the heart—even in those few cases, in which there is still some increase of blood pressure and second aortic accentuation. In twenty-five cases seen after a lapse of three months there were four which showed a constant increase of systolic blood pressure—from 160 to 190—with accentuation of the second aortic sound. In two of these the oedema had been severe and prolonged with subsequent slight exacerbations on several occasions, the amount of albumin had been large, and there was much anæmia. A third case in a man over forty was more the picture of chronic interstitial nephritis that probably antedated the

War. The fourth was the only case in which there was severe albuminuric retinitis. His history is as follows:

No. 7211, Private R. S. M., K.O.Y.L.I. Was strong as a boy; measles at seven; no scarlatina or venereal history. A dental mechanic in civil life. Went to France June, 1916, and while in trenches suffered for two months from itching sores on legs, the pigmented remains of which we counted to the number of fifty-one. These we regarded as impetigenous. Was on light duty back at headquarters. Two weeks later, having lost his appetite and feeling very seedy, his face began to swell, then the hands and feet. He developed hacking cough, sore throat, and was nauseated and vomited. The abdomen then swelled, pain was severe in all muscles, the abdomen, and across the loins. Marked constipation. Previous to these latter symptoms and while on light duty at headquarters, he had nocturnal frequency, but never noticed any change in colour of urine. The oedema lasted fifteen days and during some part of this time the systolic blood pressure reached 200, and he was passing a slightly diminished amount of urine. Two weeks later there was a return of the oedema—almost as badly as on the first occasion. The eyesight became blurred, and a month later the oculist reported, "albuminuric retinitis of both eyes. Large area of retina involved, showing large atrophic spots more or less confined to the macular regions; also some small hæmorrhagic areas. Cannot see card at twenty feet." Six weeks later there were "comparatively few recent hæmorrhagic areas—most of them, particularly in the right eye, showing large areas of atrophy and pigmentation. Vision has improved immensely." Three months after onset he was feeling much better, but was pale, slightly puffy under the eyes, and had throbbing occipital headache in the morning. Sleeps badly and is very constipated. Heart normal in size; slight accentuation of second aortic sound. Systolic blood pressure, 150. Urine, twenty-four hours amount, 42 ounces; specific gravity 1017, acid, smoky; albumin, 0.3 per cent., urea, 1.2 per cent., chlorides normal; many hyaline and granular casts, red blood and pus cells.

In several cases there has been slight and transient return of oedema of the face, particularly under the eyes, and also of the extremities, accompanied by a feeling of lassitude, muscular pains, and deep-seated loin pains. In such cases there is usually some increase of the albumin, and often of blood in the urine. A remarkable case in which oedema of the hands has persisted in spite of all treatment and amelioration of other symptoms, is worthy of mention:

No. 310856: Gunner F. B., Canadian Field Artillery, was always previously healthy, a policeman in civil life, had previously been an iron-worker. Symptoms of nephritis began with vertigo upon getting up in the morning. Then he noticed nocturnal frequency, and shortly after developed frontal headache, insomnia, and gnawing pains in legs and arms, especially in the bones. Upon reporting sick, albuminuria was found. oedema of moderate degree in hands and feet only, no visual disturbances. Three months later there was still slight oedema of hands and feet of brawny character such as one sees in myxoedema. Thyroid extract over a period of two weeks had no effect. Upon exercise the swelling increases and diminishes after resting. Heart normal in size and function; second aortic sound not accentuated; blood pressure normal. He had only slight dyspnoea. Urine, three months after onset, about normal twenty-four hour amount, acid, pale; specific gravity 1015, albumin 0.05 per cent., a few granular and hyaline casts, red blood cells, and pus cells.

In almost all of our cases several complete examinations of twenty-four hour specimens of urine were made, with measurements of the "day" and "night" amounts as well. As most of the patients were up, even though under careful instructions to pass all urine into a specimen jar, it is certain that some was lost at stool, so that the amounts which we give are only relatively accurate. The average twenty-four hour urine for all cases was 1466 c.c.; the average "day" amount being 785 c.c. and the average "night" amount 703 c.c. in nineteen cases the amount passed at night was greater than that passed during the day. The urine was clear amber in colour in all but five cases which at some time passed "smoky" urine. In the majority of the cases the amount of albumin found was only about 0.05 per cent. The chlorides were about normal in all cases except one in which there was a transient decrease during an attack of migraine to which the patient had been subject for many years. The urea which averaged for all cases about 0.12 per cent was practically normal in consideration of the fact that all were on restricted protein diets.

In conclusion, we find that almost all cases invalided to this hospital from a base hospital in France show, after a period of three months, a trace of albumin, a few granular and hyaline casts, red blood cells, and pus. The chlorides and urea are about normal. Nocturnal micturition is present in nearly 40 per cent. of the cases, and there is probably a slightly greater amount passed during the night, between eight p.m. and eight a.m., than during the day.

Many still complain of dyspnoea, slight headache, pains across the lower part of the back, and a few develop slight transient return of oedema. They are usually very well nourished, and not anæmic; in fact there is usually a striking absence of the pale countenance so common in the ordinary nephritis of civil life. The blood pressure is usually normal, and there is no enlargement of the heart. Structural retinal changes are rare, having been seen in only one of our series.

A striking feature has been the fact that in over half of our cases there has been at the onset acute catarrh of some part of the respiratory passage, most frequently a bronchitis, which was usually regarded as simply a "cold". It seems probable that a test for albuminuria at this stage would have revealed the exact nature of the malady which, as a rule, was not diagnosed until hæmaturia or oedema came on. Therefore, it seems reasonable to expect that in a locality where this infection is known to be prevalent, if all cases reporting sick with "colds" were subjected to a simple quick test for albuminuria, many cases of early nephritis would be brought under treatment then, which otherwise would return at a later date in a condition less favourable for quick recovery and return to duty.

A FIRE occurred in the Grey Nunnery at Montreal on February 14th. Some time ago, part of the building was converted into a military convalescent home and at the time of the fire there were a number of "stretcher" cases among the two hundred soldiers then in the hospital. Fortunately, all were safely carried out of the building, although a few were injured by falling debris. There were altogether about a thousand persons in the institution. The fire broke out in the top floor, which was occupied by foundling infants and a number of these babies perished as the flames spread so rapidly that it was impossible to reach them. The cause of the fire is thought to have been a defect in the electric wiring.

THE CANADIAN MEDICAL



FIG. 1—Showing gross photograph of early Duct Carcinoma



FIG. 2—Photomicrograph of section through base of Duct Carcinoma, showing infiltration and columnar type of epithelium

DUCT PAPILLOMA AND DUCT CARCINOMA OF THE BREAST

BY OLIVER R. MABEE

Assistant Surgeon, Toronto General Hospital

DUCT tumours arise from the epithelium lining the large ducts of the breast, or from one of these ducts which has become dilated and cystic. It seems quite certain that a fairly large percentage of these tumours show from the beginning a malignant tendency as evidenced by their invasion of the surrounding tissue. I have collected from the surgical records of the Toronto General Hospital, seven cases of duct tumours, and have added one case, which I recently operated upon, from my own records. In this series of eight cases five were duct papilloma and three duct carcinoma. In two of the malignant cases, there was infiltration of the surrounding tissues as well as metastases in the axillary glands. In these it was impossible to determine whether they were originally papillomata or not. In the third malignant case there is definite evidence that the tumour was originally papillomatous in nature.

The gross appearance is that of a papillomatous mass which projects into a large dilated duct. The surface is generally irregular and may have a polypoid, a fungoid, or a dendritic appearance. The papilloma is attached to the wall of a dilated duct whose surface is smooth. The lumina of the duct frequently contains blood or a thin bloody fluid which gives rise to one of the characteristic clinical symptoms, "bleeding from the nipple". When the growth is well advanced and there is marked infiltration of the surrounding tissue as well as gland metastases, its malignancy is apparent. In other cases it is necessary to make a careful microscopical examination to determine the presence of malignancy.

The microscopical appearance varies according to the size and the compactness of the mass. There may be small papillary projections covered with a single layer of columnar or cuboidal epithelium. Other areas show gland like cavities which are formed by the interlacings of the papillary projections. Where the tumour

is compact and little stroma is present, the cells are more cuboidal in shape and packed closely together. In the malignant cases there is evidence of the growth invading the surrounding tissue and the presence of mitotic figures in fairly large numbers.

The following eight cases of duct tumours of the breast occurred in women whose ages varied from thirty-six to fifty-two years. Seven occurred in married women and 75 per cent. of these were in parous women. The clinical histories show no striking predisposing factors. The incidence of duct tumours compared with other breast tumours is shown by there being only seven recorded cases in a total of five hundred and twenty-nine breast tumours examined in the department of surgical pathology at the Toronto General Hospital during the last ten years.

The physical examination showed a tumour situated usually centrally in the breast, but sometimes, as in two cases, some distance from the nipple. They varied in size from a pigeon's egg to that of a small orange. In the benign cases the mass was localized, slightly irregular and moderately firm. Two of the malignant cases showed extensive infiltration of the surrounding breast tissue and gland metastases; the other malignant case showed an oval mass the size of a hen's egg and its malignancy was only determined by the use of the microscope. Retraction of the nipple and dimpling of the skin were present in only one of the malignant cases. Pain was present in four cases, varying in amount, being most marked in the malignant cases. Bloody discharge from the nipple was present in five cases. This varied in amount from being slightly blood tinged to almost pure blood. The bloody discharge was generally intermittent or could be obtained by gently squeezing the breast. In one case it was noticed first after the patient received a blow on the breast.

The surgical treatment of duct tumours of the breast, therefore, will depend upon whether they are malignant or benign. Bloodgood, in a series of cases reported, found that 50 per cent. were malignant. In another series, by Greenough and Simmons, only 15 per cent. were malignant. In my series, 37½ per cent. were malignant.

In the literature several cases have been reported where the tumour has been removed through a small areolar incision. In some of these, local recurrence has occurred, as well as gland metastases. The above statistics show that one is not justified in removing the tumour alone. Microscopical examination should be made in every case, preferably during the operation. In my

own case a diagnosis of duct papilloma was made previous to operation. The mass was situated two and a half inches from the nipple and removed through a short curved incision. It was found to be slightly adherent to the pectoral fascia, which made me suspicious of malignancy. As there were no facilities for making a quick microscopical examination, the wound was closed. Later examination showed invasion of the surrounding tissues at the base of the papilloma, in the region where it was adherent to the pectoral fascia. Two days later, a radical operation was done in which the entire breast was removed and the axilla cleaned out. No secondary involvement of the axillary glands was found.

The tendency of papilloma in various other parts of the body to undergo malignant change is well recognized. This is also apparently true in duct papilloma of the breast and argues against conservative surgery in these cases. It would seem that at least a simple amputation should be done in cases which show no clinical evidence of malignancy. In the malignant cases the more radical the operation the less liability of recurrence there will be. In doubtful cases, microscopical examination will be the guide as to how radical the operation should be.

THE new building of the Byron Military Sanatorium at London was formally opened by His Excellency the Duke of Devonshire on January 21st. The sanatorium was taken over by the Military Hospitals Commission some time ago for the treatment of tuberculous soldiers and it was decided to add a new building to the existing institution. A nurses' home has also been added and the kitchen facilities have been increased. On the occasion of the formal opening of the new building a bronze tablet was unveiled to the memory of the late Lieutenant-Colonel Edwin Woodman Leonard, Commander of the 12th Field Battery, who fell at Vimy Ridge. The tablet is placed in the dining room, which has been completely furnished by Mr. F. E. Leonard, the father of Lieutenant-Colonel Leonard.

RUPTURE OF INTESTINES BY BLOWS UPON ABDOMEN

By J. S. WRIGHT, M.B.

Edmonton

THAT one cannot begin to estimate the extent of the internal injuries following blows upon the abdomen, by external symptoms, or marks of violence to the abdominal wall, is a lesson I have learned from a number of cases of this nature that have come under my observation.

Most serious lesions may occur to the internal viscera following violence to the abdominal wall without any external symptoms, and, conversely, the abdominal wall may show extensive contusions and lacerations without any internal injury.

This being the case, in the diagnosis of lesions of the internal organs of the abdomen, following blows, the external evidence is a negligible quantity, and other symptomatic evidence must be considered, and that exclusively, in forming an estimate of the extent of the internal damage.

The architecture of the abdominal wall may be briefly outlined as follows: From before backward we have the linea alba in the median line formed by the folding of the aponeurosis of the oblique and transversalis muscles, then the strong recti muscles with their fibres running longitudinally from the cartilages of the fifth, sixth, and seventh ribs to the pubes, and enclosed in a sheath formed by the division of the aponeurosis of the internal oblique; the aponeurosis of the external and internal oblique muscles, and the transversalis. These muscles themselves, with their fibres running at all angles across the abdominal wall, and reinforced behind by the quadratus lumborum, and some fibres from the latissimus dorsi, completes the wall of the abdomen and places the viscera behind a strong barrier against external violence.

It is easily understood, how any organ more or less fixed, behind so strong a protecting wall, might be injured by external violence, but that the intestines hanging loosely from their suspending mesentery should be so injured is difficult to conceive, and

Read before the meeting of the Alberta Medical Association.

indeed is still more difficult to understand when we consider that the muscle fibres of the bowel are arranged in circular and longitudinal bands which gives the strongest possible arrangement to the coats of the gut itself.

However, injury to the bowel by direct violence to the abdominal wall is possible under two conditions.

First, when the force is sufficient to carry the abdominal wall back so that the bowel is caught between the object producing the force, and the body of a lumbar vertebra. Here, of course, the position of the patient at the time of injury must be considered. When the body is inclined forward, the ability to withstand blows upon the abdomen is lessened owing to a degree of relaxation of the abdominal muscles, and the power of resistance will lessen just in proportion to the degree of stooping when the accident occurs.

In all industrial pursuits the position of the body during hours of labour is more or less that of stooping, and it is therefore more than probable that rupture of the bowel in these cases is caused in the manner stated.

Again, a weak, flabby abdominal wall would predispose to this form of injury, as the resistance of the wall in this case would be less than that of the well developed and muscular abdomen, and in individuals of this type the position at the time of injury would not be so great a factor as in the well developed muscular individual.

In automobile parlance the bowel is "rim cut".

A second possible condition in which rupture of the bowel might occur is that it is filled by a solid or semi-solid matter that offers sufficient resistance to rupture the gut before it can recede from the oncoming object producing the sudden blow to the wall. An accident of this nature could only occur some time after a full meal, when the intestines contained the maximum amount of faecal matter, and would be most likely to occur when the body was in the erect position, as the bowel of necessity must be in contact with the abdominal wall.

A third possible condition I will mention and dismiss. That is, that rupture may occur by reflex stimulation of the intestinal nerves, through the nerve supply of the abdominal wall. Any blow upon the abdomen produces an instant tightening of the muscles, and it is not beyond a possibility that this tension is reflected to the intestinal coats to such a degree that spontaneous rupture occurs.

Diagnosis: As already stated the presence or absence of contusions, or other markings upon the abdominal wall, is a negligible quantity in the diagnosis of intestinal rupture due to blows, and the constitutional symptoms alone must lead to conclusions.

Rigidity of the abdominal muscles, pain of a severe type, a strained and anxious countenance, a varying degree of shock, and a rapidly increasing pulse rate, are sufficient signs to lead me to a very positive conclusion that serious trouble exists within the abdomen and to advise immediate operation.

Treatment in these injuries is purely surgical, where conditions at all warrant this mode of interference, and the chance of recovery is in the inverse ratio to the number of hours intervening between the time of injury and the opening of the abdomen.

During the Boer war the method of treating gunshot wounds of the abdomen was expectant. The patient was placed in bed with the head raised was starved and given opium in some form, not only to control the pain, but to lessen peristalsis, hoping thereby to get a sealing of the wound and prevent the escape of bowel contents in abdominal cavity.

Not so the present war. Fauntleroy in the *Annals of Surgery*, August, 1916, states that small bullet wounds, where the wound of exit is no greater than the wound of entry, may be so treated, but all others require immediate operation. This he states is especially true of shrapnel wounds.

Dr. Joseph A. Beake, surgeon-in-chief to a large base hospital, somewhere-in-France, makes this statement: "I have seen remarkably good work done in a first aid base hospital situated in front of the big guns. In a twenty bed hospital, so situated, established in a laundry, I saw eight cases of resection of the bowel for multiple gun shot wounds, getting better. I firmly believe in easy interference.

A free incision, beginning just below the umbilicus and carried down to the pubes, is usually sufficient to examine the coils of intestines and locate the trouble. When located the further procedure will depend upon the condition of the bowel. If it is much lacerated the part should be resected and the ends united either by a Murphy button or sutures, the latter preferred, excepting in cases when speed is a factor. Lanes are closed in the ordinary way with Lambert sutures, care being exercised to reduce the diameter of the bowel to the least possible degree.

Small puncture wounds are satisfactorily closed by a purse-string suture, inverting the edges and placing a second row of Lambert sutures over the area.

The abdominal wound is closed from above downwards, and left open at the lower angle sufficient to admit a large sized cigarette drain or rubber tube, which is carried well down into the pelvis, the dressing applied and the patient returned to bed. Shock, always being present, in a greater or less degree, it is important to see that the bed is warmed, as the neglect of a minor detail like this, might easily turn the scales against the patient.

As soon as the effects of the anæsthetic have passed off, the head of the bed is raised and the patient remains in the Fowler position until the discharge ceases, or until all danger of infecting the upper abdomen has passed.

CASE REPORTS

Case 1. Carpenter, age thirty-six, employed in sash and door factory, was sizing a piece of material on circular saw. Had pushed it through and was in the act of lifting it back when it slipped from his grasp, caught the saw and was driven violently into the abdomen. He received a knock-out blow for a few minutes, after which he got up and resumed his work for about one-half hour. The pain increasing, he was taken in an auto to his home where I saw him for the first time about two hours after the accident. On first examination no evidence of violence to the abdominal wall was present, the abdomen not even being reddened. The only symptoms present were a very rigid abdominal wall and evidence of pain, no particular disturbance of pulse, and temperature normal. However from the extreme rigidity of the abdomen and the pain the patient seemed to be suffering, I suspected serious internal injury and advised removal to hospital, which advice was rejected. Ordered heat to abdomen and told people I would return within two hours.

On my return just about two hours later, I found marked changes in the patient's condition. The face had taken on a pinched and anxious expression. The pulse rate had increased over twenty per minute and temperature was about 100°. The patient was told that opening the abdomen was imperative, and now readily consented to operation.

He was removed to the hospital and the abdomen opened by free incision; considerable fluid escaped, and on raising the abdominal wall two areas were observed thickly covered by lymph. On examining these it was found that at these two points the bowel was perforated and the deposit of lymph was nature's effort to close the break. The perforations were closed with a double

row of sutures, the area wiped out with dry sponges, a large cigarette drain placed in the lower angle of the incision, the wound closed and the patient returned to bed.

For four days this patient received nothing by mouth but sips of warm water at frequent intervals, after which he was given bouillon for the next two days.

On the sixth day a mild dose of oil was given which was effective, after which the patient was placed on soft diet for about a week, when the diet was increased gradually until at about the twentieth day from the accident he was getting a careful general diet.

As soon as the patient was out of the anæsthetic he was placed in Fowler's position and kept there for about three weeks. The recovery was tedious but uneventful, the patient leaving the hospital on the fiftieth day after operation.

Case 2. Stable-boy, age twenty-four, doing night duty in a stable where delivery horses were kept. About four o'clock in the morning when getting the horses ready for the day's work he was kicked in the abdomen. Lay in the barn until about eight o'clock when he was taken to his room where I saw him about ten.

On examination the only evidence of violence was a small, slightly reddened area. The patient was lying on the right side with the knees drawn up on abdomen. Pained and anxious countenance, rigid abdomen dull on persuasion, temperature 100.3° , pulse 120. I had no hesitation in arriving at a diagnosis of serious abdominal injury, and advised removal to the hospital and immediate operation, to neither of which would the patient consent at the time, and not until over thirty hours after the accident would he accept my advice.

On opening the abdomen large quantities of fluid escaped mixed with many lymph flakes. The intestines were inflamed and covered by deposits of lymph, which on being removed left bleeding surfaces.

The rupture in the bowel in this case was about eight inches from the ileo-cæcal valve in the ileum and was a longitudinal break of about one inch. This was repaired in the ordinary way with a double row of sutures, a large rubber tube placed in the lower part of the wound which was sutured from above downwards, the dressing applied and the patient returned to bed. The patient failed to rally after the operation and died about twenty hours later.

This young man's life was sacrificed through delayed operation. He had everything in his favour—youth, health and clean-

living—to insure recovery had the operation been undertaken when it was first advised.

Case 3. A lumber-jack, about the middle twenties, helping to haul a heavy freight-scow out of the water for repairs. In doing this a double block-and-tackle was used, with a one and one-half inch hemp rope. One hook was fastened to the scow and the other to a tree some distance from the shore, and the pulling end of the rope brought back to the donkey engine on a large tug. This chap was standing near the block attached to the tree when rope parted between him and the engine, the end coming back and striking him on the abdomen.

The accident occurred in the afternoon, and was about thirty miles distant from my office. A small tug was dispatched for me, but being away from my office when it arrived, I did not reach the patient until about twenty hours after the accident.

I found the patient lying on a bunk in the lumber shanty, with pained and anxious countenance, moderately distended abdomen, marked dulness in percussion, shock, rapid pulse, and temperature about 101°. My diagnosis was probable rupture of the intestines.

Deliberate operation was out of the question owing to his surroundings, and my being without assistance. Drainage seemed imperative if the chap was to have a fighting chance, and the abdomen was opened under cocaine by a small incision. Large quantities of fluid escaped, a gauze wick was carried down into the pelvis as well as it could be done, a dressing applied, and the patient returned to his bunk.

I remained with the patient until next day, using morphine freely, when he was taken aboard the tug and taken to the village. Being without a hospital he was kept in the company's boarding house, where for a week he put up a splendid fight for life. Finally he began to improve and was able to be about in about ten weeks, but with a fæcal fistula. About six months later the abdomen was opened and the gut repaired and the chap, so far as I know, is still living.

I consider that this chap recovered owing to my good fortune in making the original incision directly over the rupture in the intestine as I discovered at the subsequent operation.

Cases 1 and 2 are in no way different from hundreds of cases surgeons, the world over, might report, and are here reported for the purpose of bearing out the statement made at the beginning of this paper that the chance of recovery is in the inverse ratio to

the number of hours intervening between the accident and the operation. Both of these men were young and healthy and at the time of the injury had equal chances for recovery, time being the only factor in the subsequent outcome. Case 1 was in bed after the operation within six hours from the time of injury, and recovered. Case 2 was not operated upon until over thirty hours after the injury, and died.

Case 3 is a striking demonstration of what nature will do for a patient if given half a chance. It would be extravagant to claim that the operative procedure in this case did anything more than give nature a chance to do its work, and in this particular case the work was well done.

A NOTICE has been sent by the New Brunswick Board of Health to all milk dealers requesting them to forward to the Board suggestions concerning the best way of providing for the pasteurization of all milk sold in the province. Some of larger dealers have already instituted this procedure but the cost of a pasteurizer makes it impossible for many of the smaller venders to do this. It has been suggested that the latter might coöperate in the purchase of a pasteurizer or that one dealer should undertake to pasteurize milk for other dealers at a fixed price.

Case Reports

TRAUMATIC RUPTURE OF THE JEJUNUM

OPERATION—RECOVERY

BY L. BRUCE ROBERTSON, B.A., M.B., *Major, C.A.M.C.*

No. — Canadian Casualty Clearing Station, B.E.F.

THE following case of traumatic rupture of the jejunum is of interest from its severity and complications, as well as its fortunate issue:

Gunner H—, West Lancashires, age thirty-nine years, while walking along the road from V—, was run over by a three ton army lorry at about five p.m. on December 17th, 1916. He was admitted to the Casualty Clearing Station at 9.30 p.m., and stated that the front wheel of the lorry had passed over his body about the level of the lower border of the chest, and that the vehicle had been stopped just as the rear wheel struck him. On admission he was in considerable thoracic and abdominal pain, the latter being localized in the epigastrium and left hypochondrium. No bruising of the chest wall or abdomen could be made out on the closest inspection, and it seemed almost impossible that even the front wheel of an army lorry could have passed across the abdomen. Pressure over the lower left ribs caused acute pain and he breathed with an expiratory grunt. Examination of the chest showed slightly suppressed breath sounds only, at both bases. No fracture of the ribs could be detected. Moderate rigidity of the upper half of both recti was present. There was no sign of free fluid in the abdomen. Pulse was 88 and of good quality. Blood pressure was, systolic 120, diastolic 80 m.m. Hg. Urine contained no blood. Patient stated that he had vomited two or three times prior to admission. As he was very much chilled, it was thought advisable to get him well warmed and keep him under close observation. One hour later the pulse was still 88 and the abdominal signs unchanged. Two hours after admission the pulse rate was the same, but the patient had vomited twice. There was an increase in the abdominal rigidity and there were signs of fluid in the left flank.

Operation was decided upon. Under ether anæsthesia a long

left rectus incision was made above the umbilicus. On opening the peritoneum dark bloody fluid appeared in moderate amount. There was no injury to spleen or liver. The left side of the great omentum was so badly torn that a portion about six inches square had to be removed. There was an oblique tear through more than half the circumference of the jejunum, about eight inches from the duodeno-jejunal flexure, the tear extending downwards and forwards from the mesenteric border. The mucous membrane was very much everted and swollen. For about six inches on either side of the rupture the bowel was purplish and œdematous. The mesentery opposite to the tear was torn and bruised from the gut to the base on its antero-superior aspect. The exposed mesenteric vessels were much dilated, but none of the large branches torn through or thrombosed. There was comparatively slight extravasation of intestinal contents. The jejunal tear was closed with two layers of linen suture, mesentery repaired with catgut, pelvis cleaned of blood and intestinal contents, and mopped out with "eusal". A suprapubic drain was introduced and the abdominal wall closed in layers.

On account of the evident damage to the gut and the possibility of paralysis at the site of the injury, resection was considered, but, as the œdema and discoloration extended to within such a short distance of the duodeno-jejunal flexure, it was thought to be too long a procedure. For the same reason the idea of gastro-enterostomy was dismissed, as the patient's condition after opening the abdomen, did not justify any but the shortest operative measures.

Two days after the operation he developed a lobar pneumonia of a severe type, the left lower lobe being affected. This condition, however, was not unexpected, on account of the injury to his chest ("contusion pneumonia") and subsequent exposure, in addition to the retardation of the movements of his abdominal wall and diaphragm.

The abdominal condition cleared up rapidly, apart from some troublesome diarrhœa which persisted for a few days. The chest condition gave him extreme discomfort and at times he became cyanosed and dyspnoic. At these times he obtained immense relief through the administration of oxygen by means of a nitrous oxide bag and face mask, such as is used in cases of poisoning by the German "drift" gas. The removal of the pelvic drain after four days was followed by a foul smelling discharge from the pelvis, which persisted for a few days. Two weeks after operation, when the chest condition had practically cleared up, he was evacuated to

a base hospital, where he remained for a week before being sent to England. At this time his wounds had healed and his condition was improving rapidly. When last heard from (January 27th, 1917) he was up, and "making rapid strides toward recovery", to quote his own words.

In reviewing the history of the case, it appears that the front wheel of the lorry must have passed completely across the abdomen, crushing the jejunum and great omentum against the prominent vertebral column. The comparatively small amount of extravasated intestinal contents present, in view of the large rupture of the bowel, was probably due to a traumatic paralysis of the latter. Although the blood pressure at the time of admission appeared to be practically normal, it was found later that his normal blood pressure was much higher, so that the first reading showed really a lowered blood pressure.

Two similar successful cases of traumatic rupture of the jejunum near the duodeno-jejunal flexure have been reported recently. In the first one¹, some twenty hours had elapsed before the patient was admitted to hospital for operation. There was a tear two and one-half inches long in the jejunum, twelve inches from the flexure, and general peritonitis was present. The lacerated bowel lay far back in the left flank near the spleen. The mesenteric border was not torn, but there was a good deal of bruising of the mesentery. The opening in the bowel was closed with two layers of fine black thread. The patient made a good recovery.

In the second case² the jejunum was torn completely across about six inches below the flexure. Resection was considered but not carried out on account of the additional shock involved. End-to-end anastomosis was done, the abdomen washed out with saline, and a pelvic drain introduced. The patient made a good recovery.

A point of great interest in these cases is that it is often possible to avoid resection, in spite of the apparent bruising and œdema of the bowel. This shortens the operation and lessens the shock. The importance of removing as much as possible of the intestinal contents from the peritoneal cavity is also emphasized in these two reports.

For the opportunity of reporting this case, I am indebted to Lieutenant-Colonel J. E. Davey, C.A.M.C.

References:

1. R. P. ROWLANDS, *Lancet*, February 26th, 1916.
2. W. SAMPSON HANDLEY, *Lancet*, January 20th, 1917.

REPORT OF SIX CASES OF TONSILLECTOMY IN DIPHThERIA CARRIERS

By C. C. BALLANTYNE, M.B. (TOR.)

Captain, C.A.M.C., Moore Barracks, Canadian Hospital, Shorncliffe

AND

B. S. CORNELL, M.B. (TOR.)

*Lieutenant, C.A.M.C., No. 2. Canadian Mobile Laboratory,
Folkestone.*

DURING the months of June and July, 1917, at Moore Barracks, Canadian Hospital, Shorncliffe, about fifty cases of diphtheria and diphtheria carriers were treated. The so-called carriers particularly presented a problem in that persistent treatment failed to eliminate the germ. Accordingly, tonsillectomy was resorted to in some of these carriers, and herewith is submitted a report of six cases in which the operation was performed. While no originality is claimed for the treatment, the results may perhaps prove interesting.

The technique was as follows:

The tonsils were completely enucleated by the dissection and snare method, and swabs were at once taken from the oral surfaces of the removed tonsils. Then after thoroughly cleansing the tonsils externally with alcohol and ether, cross sections of the gland were made at three different levels with sterile knives. Swabs were at once taken from the crypts at each of these different levels, the first being one-eighth of an inch beneath the oral surface, the second at the centre of the tonsil, and the third one-eighth of an inch from the capsule. Hypertrophied adenoids, when present, were also removed, sectioned, and swabbed in a similar manner. The swabs were immediately planted on Loeffler's blood serum media, incubated for twelve hours and the resulting growths examined for the bacillus diphtheriæ.

Case 1. Private W., admitted suffering from peritonsillar abscess which readily subsided after incision. On May 24th, as

a result of routine swabbing, he was found to be a diphtheria carrier. Until June 12th, swabs were invariably positive and on that date tonsillectomy was performed. Swabs from the tonsil showed:

Right. Surface, positive; top section, negative; middle section, negative; bottom section, negative.

Left. The same as right.

Adenoids. Surface, positive; section, positive.

Subsequent throat swabs—three successive negatives on June 15th, 18th, and 20th.

Case 2. Private M., admitted as a carrier and for six weeks numerous swabs were repeatedly positive. Tonsillectomy on June 12th.

Right. Surface, positive; top section, positive; middle section, negative; bottom section, negative.

Left. Surface, positive; top section, positive; middle section, positive; bottom section, negative.

Subsequent throat swabs: successive negatives on June 15th, 18th, and 20th.

Case 3. Private S., admitted with mild tonsillitis which readily subsided in forty-eight hours without antitoxin. Routine swab June 3rd positive for diphtheria and repeated subsequent swabs positive. Tonsillectomy June 12th.

Swabs from tonsils showed:

Right. Surface, positive; top section, positive; middle section, negative; bottom section, positive;

Left. Positive throughout.

Three successive negative swabs were not obtained until June 26th, 27th, and 28th.

Case 4. Private T., admitted June 17th as a carrier. Swabs persistently positive. No constitutional reaction. Tonsillectomy on June 29th. Swabs from tonsils showed:

Right. Positive throughout.

Left. Positive throughout.

Three successive negatives obtained July 6th, 7th, and 9th.

Case 5. Private O. H., admitted May 25th as diphtheria carrier. Swabs invariably positive. Tonsillectomy June 21st. Swabs from tonsils showed both tonsils strongly positive throughout. Three successive negatives were obtained June 23rd, 24th, and 25th.

Case 6. Private Z., admitted June 5th with mild diphtheria which readily responded to 12,000 units of antitoxin. Swabs posi-

tive persistently till June 29th. Tonsillectomy June 29th. Swabs from tonsils showed:

Both tonsils strongly positive throughout. Successive negatives obtained July 3rd, 4th, and 5th.

In these six cases, the operation obviously accomplished the object for which it was undertaken. Although, in some the organisms persisted for a few days after operation, they disappeared with the healing of the wound. In all these cases, saline irrigations and gargles had been continuously used until the time of operation and their failure is explained by the pathological findings, since in four of the six cases, the bacilli were found in the very depths of the crypts and surface applications could not be expected to reach them.

Living cultures of *staphylococcus pyogenes albus* had also been employed as sprays over the tonsils in the hope of outgrowing the diphtheria bacillus, and it was usually found that swabs taken next day were negative for Klebs-Loeffler organisms but were loaded with staphylococci. The bacilli, however, reappeared in large numbers within a day or two. The probable explanation is that the large numbers of staphylococci collected in the first swabs had outgrown the bacilli on the media. If, however, the staphylococci outgrew the bacilli on the tonsils, then fresh organisms were soon resupplied from the tonsillar crypts.

From the findings in the above six cases then, one may draw the two main conclusions:

1. That in apparently normal individuals, the bacillus diphtheria may be harboured in the depths of the tonsillar crypts.

2. That complete enucleation of the tonsils seems to be a successful means for eliminating diphtheria organisms from carriers, although it appears too drastic a measure for routine adoption.

REPAIR OF NOSE BY TRANSFERRED FLAP OPERATION
WITH INCLUDED BONE-GRAFT

BY EDMUND BOYD, M.B.,

AND

W. E. GALLIE, M.B.

Toronto

THE patient, G. J., was referred in January, 1917, having met with an accident at a mining camp, in which he was caught between an elevator and the flooring. The injury was very severe, the crush coming mainly between the eyes. The skull and the right malar bone were fractured, the right orbital plate being displaced downwards, carrying the eye. The nose was crushed in level with the cheeks.

When seen by us some four months afterwards, the condition was as follows:

The bridge of the nose was totally absent, leaving a large fistula, one inch by three quarters of an inch into the interior of the nose, into which one's thumb could readily be placed. The lower half of the nose was flattened and twisted crosswise. The septum was lying crosswise and occluding both nares. A slight purulent discharge was coming from the right ethmoidal region. The left eye was in normal position, but the skin of the inner canthus was drawn together and cicatricial. The right eye was displaced downwards, the inner part of the eyelids being drawn together and nearly all scar tissue. The skin about the fistula was thin, cicatricial, and not of healthy vascularity.

After consultation it was decided to attempt to repair the nose, and close the sinus by a transferred flap from the arm with included bone graft; this was carried out in the following stages:

1st Stage. Under anæsthesia, the remnant of the nose was freed and moulded into position; the septum, which had been crushed to a Z-like shape was restored to position and splinted; the ethmoidal regions were cleared. A sequestrum of the right nasal bone was found impacted in the right cells (this being the cause of the purulent secretion). The openings of the frontal

sinuses were ensured of patency. The splints were left *in situ* for fourteen days.

2nd Stage. Under anæsthesia, the nose was readjusted and resplinted. The ninth rib on the right side was now exposed, and the superficial half of a piece, one and one-half inches long removed with the periosteum. This piece was folded on its long axis with the periosteum outside and tied with cat gut. This was implanted under the skin of the dorsal surface of the left arm, about four inches from the wrist. The folded edge lying deeply; it was left for three weeks.

3rd Stage. Under anæsthesia, the edges of the sinus, except the lower, were cut away until healthy tissue was reached, and redundant granulation at other parts was removed. A flap of skin, including bone graft and deep fascia was now made from the arm, large enough for shrinkage and with a wide base to ensure proper blood supply. This was turned up and placed in position over the fistula, its free end meeting the upper edge. A part of the frontal bone was now chiselled out and the end of the bone graft fitted into it; the flap was united by horse hair sutures to the edges as far as it was possible. Dressings were applied, and the arm and shoulder fixed in this position by plaster bandages. This was left for nineteen days.

4th Stage. Under anæsthesia, the plaster was removed. The flap which had firmly united, was cut off at the base and sutured to the lower part of the sides of the fistula. As the lowest part which was now protruding had established a good circulation, it was decided to leave it for the time being until the rest of the flap had perfectly united. This was trimmed and united four weeks later.

The recovery was eventually perfect. A small sinus existed at the upper part for a short time, from which a purulent discharge came from the right orbital region. The healing on the internal surface was good, union place taking between the bony surfaces in contact, with no discharge at any time. The surface condition now shows the fistula closed by a solid bridge of tissue level with the cheek surface. He has good and adequate nasal breathing.

It was intended to improve the cosmetic result, by superimposing bone grafts to make a bridge, but the result as it stands is so good, and the patient is so well satisfied—that it seems wiser not to proceed further.

THE CANADIAN MEDICAL



LIEUTENANT-COLONEL JOHN MCCRAE, B.A., M.B., M.R.C.P.

Canadian Army Medical Corps, British Expeditionary Force.

Born November 30th, 1872—died January 28th, 1918.

Editorial

LIEUTENANT-COLONEL JOHN McCRAE, B.A., M.B.,
M.R.C.P.

Canadian Army Medical Corps, British Expeditionary Force

IT has been said that John McCrae was the most talented man in the medical profession in Canada, and that is probably true. By that we mean that over and above his undoubted ability in general medicine he possessed talents of varied order, which he at least did not wrap in a napkin and hide. His reputation as a poet is already established on both sides of the Atlantic. His knowledge of general subjects such as history and biography, military work, and general literature, both French and English, was unusually extensive. Though no musician, he had a keen ear for music; though no artist he could do well in simple line drawing. He had travelled extensively, and was familiar with Europe, particularly England and France, but going also as far east as Roumania. He had served his country with distinction in the Boer War as a combatant, winning his majority and the command of an artillery brigade. In this war he also served his country to the full measure of his ability from the very moment that war was declared up to his death. He died on January 28th last at No. 14 General Hospital, in Wimereux, after an illness of four days, of a virulent type of pneumonia complicated by meningitis. The wards in the winter time are full of it, and in France pneumonia has been of a very serious type, speaking generally. Doubtless he got it during the performance of his duty. He always felt keenly that, though his activities were necessarily confined to the Medical Corps he was working as much on active service and

on the field as any "soldier". Once, while making rounds in his huts, one of the men thoughtlessly called him "doctor". McCrae was quick in the answer. "Don't call me doctor", he said. "I'm as much a soldier as you are."

The military instinct in him was strong. Punctuality, discipline, unquestioning obedience, the subordinating of self to the general need of one's country, detestation of slackness, tenacity, the complete fulfilment of one's duty—these were cardinal virtues in his eyes—and he followed them. One privilege of the soldier, the traditional privilege of "grouching", he allowed himself, but his grouching was never about hardships. Of these he took his share, and sometimes more than his share. When as a Field Officer he might have had a room in a hut with a coal fire, he preferred to stick to his tent. This was no Spartan love of hardship, for he was rather sensitive to cold and was subject to attacks of bronchial asthma; it was rather, as we believe, a vague feeling that he did not desire comparative luxury while the men were enduring discomfort.

He was born forty-five years ago in Guelph, Ontario. At the age of fourteen, as he sometimes remarked with a slight tinge of pride, he was already in the militia. He took his B.A. degree at Toronto, and went on to his M.B. at the same University, graduating in the year 1898. After graduating he followed the work of Professors Welch and Osler at the Johns Hopkins Hospital, and later went to London where he took his degree of M.R.C.P. He came to McGill University as Fellow in Pathology in 1902 under Professor Adami, and later became successively Resident Pathologist to the Montreal General and Assistant Pathologist to the Royal Victoria Hospital. In 1905 he left pathology and became associated with the chair of clinical medicine as Lecturer in the University and Assistant Physician in the Royal Victoria Hospital, which posts he still held at the time of his death.

At the outbreak of the war he was on the ocean, on the road to London for his summer holiday. Just before sailing from Canada, a letter was received from him saying that

he hardly liked to leave at that moment and be out of touch with the world for ten days, for he thought war might break out at any moment. His fear was justified. On arriving in England, he immediately cabled back to Headquarters an offer of his services either as a combatant or in the C.A.M.C.

Returning immediately to Canada, he was made M.O. to the 1st Brigade of Field Artillery, went with them to Valcartier and crossed with the first contingent. His later letters described the mud and cold and wet of Salisbury Plain, the crossing to France, the early Canadian engagements, the terrific, and at that time quite new, intensity of the artillery fire at Neuve Chapelle, and finally the fiery ordeal through which the Canadians passed at the second battle of Ypres. There he did splendid work among the wounded not only of his own but of neighbouring units, and had several very close escapes from shells while running from his own dugout to those of neighbouring brigades to tend the wounded. His Colonel, now General Morison, was an old comrade of the Boer War, and a kindred spirit. McCrae was in his element in the second battle of Ypres—a righteous and fierce defensive fight against unprovoked aggression and heavy odds. The Canadians literally saved France that time, when they stopped the gap left by the Senegalese who had given way before the awful gas. And the first Field Artillery Brigade had a glorious share in that fearfully hard fight.

Early in May, McCrae was recalled to base to assume the duties of Lieutenant-Colonel in charge of the medical side of No. 3 Canadian General Hospital, familiarly known in Canada as Colonel Birkett's unit or the McGill Hospital. With it he crossed again to France on June 19th, 1915, and with it he served continuously till his death on January 28th, 1918. His outstanding ability came gradually to recognition among the consultants of the Boulogne area; so that just a few days before his last illness he was appointed medical consultant to one of the English armies in France. This was an absolutely

unexampled distinction for a Canadian to attain to over there; and it is a melancholy satisfaction to us, his close friends, that "Jack" had received such a signal honour before death claimed him.

Any detailed recital of the work he had accomplished in his forty-five years of life would be too long for this place. In his profession, he was a physician beloved by all his patients; to the sick poor in hospital always faithful and kind; to the students an ideal teacher, one who had his wide knowledge of pathology and of medicine thoroughly classified and clarified, and who could fasten that knowledge in the student's mind with the nail of the picturesque phrase. He had a phenomenal memory both of facts and of words; and this, with a fundamental love of humour, made him one of the best story-tellers in Canada. He was, wherever he went, a great social favourite. His name will live in poetry. The help to recruiting and to Victory Loans brought by his "In Flanders' Fields" was certainly enormous.

In medicine he had already risen to a noteworthy position, as a consultant in Montreal, as a hospital physician, as a teacher, and as a writer. The text-book of Adami and McCrae in "Pathology" is to-day easily one of the best and most widely known. His original articles on "Inflammation", on the "Pathology of Burns", on "Scarlet Fever", on the "Use of Subcutaneous Oxygen in Pneumonia", and others, are all valuable. His industry was great, his ability to make use of the "odd half-hour" was phenomenal. The bulk of his analysis of over eight hundred cases of scarlet fever was done in such odd half-hours.

Finally as a friend, and he had many, what can one say? His friendship was loyalty to the *nth* term; and it was, over and above that, charm, and humour, and wit, and information and stimulation, and general kindliness.

Following are the two poems that have made Lieutenant-Colonel McCrae's name a household word wherever the English tongue is spoken:

IN FLANDERS' FIELDS

In Flanders' fields, the poppies blow
Between the crosses, row on row,
That mark our place; and in the sky
The larks, still bravely singing, fly,
Scarce heard amid the guns below.

We are the dead. Short days ago
We lived, felt dawn, saw sunset glow,
Loved and were loved; and now we lie
In Flanders' fields.

Take up our quarrel with the foe!
To you, from failing hands, we throw
The torch. Be yours to lift it high!
If ye break faith with us who die
We shall not sleep, though poppies blow
In Flanders' fields.

THE ANXIOUS DEAD

O guns, fall silent till the dead men hear
Above their heads the legions pressing on;
(These fought their fight in time of bitter fear
And died not knowing how the day had gone.)

O flashing muzzles, pause and let them see
The coming dawn that streaks the sky afar;
Then let your mighty chorus witness be
To them, and Cæsar, that we still make war.

Tell them, O guns, that we have heard their call,
That we have sworn, and will not turn aside,
That we will onward till we win or fall,
That we will keep the faith for which they died.

Bid them be patient, and some day, anon
They shall feel earth enwrapt in silence deep,
Shall greet in wonderment, the quiet dawn,
And in content may turn them to their sleep.

THE work of the Canadian Army Medical Corps in the past year, and the great improvements that have been effected in this branch of the service, are set forth in a report recently submitted by Surgeon-General Foster, Director of Medical Services, to the Overseas Minister of Militia. The work of the Army Medical Service is considered in two parts, the professional and the military.

Reviewing the principal items of constructive improvement made in the Canadian Army Medical Service in England during 1917, the report states that the following units were organized or reorganized: Ten general hospitals, eight special hospitals, six convalescent hospitals, one ship hospital, two laboratory units, four sanitary sections, one central medical stores, two advance medical stores, one regimental depot and training school, two administrative units,—a D.M.S. branch and a D.M.S., London area.

In the reorganization, the report declares, the personnel was thoroughly sifted for the release of men fit for general service and their replacement by men of lower categories. Nearly the strength of a battalion, 917 men, were released to the combatant forces in this process. The report adds: "A definite and fair policy has been adopted governing the selection of all ranks for the service in France. A fair and just policy has been adopted governing the promotion of all ranks."

The net total expansion is 11,432 beds. Including hospitals temporarily closed down during their removal, the total Canadian hospital capacity is now 19,950 beds.

An average of more than 6,000 sittings of medical boards was held per month, and an average of more than 14,000 troops per month reviewed for classification.

A REPORT on health conditions in St. John, New Brunswick, has been prepared by Mr. John Hall at the request of the provincial government. After careful consideration of conditions, certain conclusions have been reached which

have been made the basis of a number of recommendations. The report states that it is not to be expected that all of these recommendations can be put into effect at once, nor can some of them be adopted without additional legislation by the provincial authorities, but they form a plan, which, if followed, would give the city and county of St. John, modern and effective means for protecting health. Among these recommendations are the following:

That the chief district health officer be paid a salary consistent with the duties he is expected to perform and that he devote his whole time to the work.

That the health department be provided with an automobile for the use of the health officer and his staff.

That the Vital Statistics Law be enforced.

That the registration of births, marriages and deaths for the city and county be placed under the direction of the chief district health officer.

That a so-called spot-map be used in the office to indicate the location of cases of the reportable diseases.

That the General Hospital be repaired and considerably enlarged and that provision for maternity cases be made there.

That laboratory facilities be secured either through the local or provincial boards of health for making complete examinations of water and milk and for making diagnoses from proper specimens in cases of diphtheria, tuberculosis, typhoid fever, malaria and venereal disease.

That a refrigerator be provided for vaccine and that it also be used for a supply of diphtheria antitoxin and anti-typhoid serum, to be supplied free to those unable to pay, and at cost to any one else.

That the board of health, the Victorian Order of Nurses, the Children's Aid Society, the hospitals, and all other organizations engaged in welfare activities coöperate in every way, so that the best work can be done with the utmost efficiency and the least overlapping and delay.

That a system of medical inspection of school children be adopted with a part time physician and a full time nurse in the employ of and under the control of the local health department.

That a trained nurse familiar with public health work be added to the staff of the health department, to inaugurate and carry out prenatal and infant welfare work.

That a campaign of publicity and education be carried on through the schools and the press, by means of exhibits, lectures and circulars of information, and that the important facts of hygiene and health be brought to the attention of the public in every possible way.

Other recommendations are contained in the report, in respect to sanitary conditions, the milk supply, etc. Reference is made also to the importance of gaining the coöperation of the people and of giving them information and advice on health topics.

It is expected that the question of the establishment of a department of public health will be brought up during the present session of the provincial parliament. The subject was discussed at a meeting of the provincial government on February 7th, last.

A REPORT of the year's work of the health department was submitted to the Manitoba Legislature on February 8th, by Dr. Armstrong, the provincial secretary. It will be remembered that the work of the Manitoba Board of Health was reorganized two years ago. This was the first report of a full year's work presented by the Board.

In 1916, as the funds at the disposal of the Board for the purpose were insufficient to permit of the employment of permanent nurses, an arrangement was made in the municipalities of Assiniboia, Rockwood, Dauphin, Portage la Prairie, Brandon and Dauphin Town, by which the municipality, the school board and the government each paid one-third of the cost of a district nurse. It is hoped that a

similar arrangement may be made in other places in the province. In these six out of one hundred and fifty municipalities in the province of Manitoba, 9,304 children were examined and it was found that 25 per cent. had defective teeth, 20 per cent. had enlarged tonsils, 16 per cent. were suffering from adenoids, in 12 per cent. vision was defective, 8 per cent. had enlarged glands, in 3 per cent. hearing was defective, and 2 per cent. were suffering from skin affections. Four thousand, six hundred and ten houses were visited, where instruction was given to families in sanitation and child welfare work. Fifty-five cases of incipient tuberculosis were discovered and thirty-six cases of advanced disease referred for medical treatment. In Brandon, the deaths of children under two years of age caused by diarrhoea and enteritis were reduced from thirteen in 1916 to three in 1917.

In other parts of the province four nurses were employed by the Board for emergency calls and educational work, but as they were unable to stay in one district longer than from six to eight weeks their accomplishment was necessarily limited. For instance: it was possible to examine only 12,179 children out of the 77,278 registered in the province and only one hundred and sixty out of the 1,582 schools in the province were visited; these figures apply to the whole province with exception of Winnipeg. It is hoped, however, that it will be possible to extend the work until provision has been made for the medical examination of every child and also for the free treatment of those whose parents cannot afford to bear the expense.

The situation as far as tuberculosis is concerned is shown by the fact that of three hundred and seven cases admitted to the Ninette Sanatorium during the year 1917, one hundred and fifty-five were already far advanced in the course of the disease and fifty-one were apparently hopeless; sixty-one were moderately advanced and forty were incipient. During December, of the twenty-five cases admitted, eighteen

were advanced, one was hopeless, four fairly advanced, and two incipient. It was pointed out in the report that as long as the majority of the cases upon admission were already in an advanced stage of disease, the results of treatment could not be other than they are at present and the rate of mortality would remain at its present high level. The early detection of the disease was the only way to improve existing conditions and to diminish the number of cases, and one of the ways of accomplishing this was through the work of district nurses whose duties would take them into the homes of the people. The annual grant made to the sanatorium by the rural municipalities was recently increased from \$25,000 to \$50,000.

A PLAN has been evolved by the American Association for the Study and Prevention of Tuberculosis, working in conjunction with the Surgeon-General of the United States Army, the Y.M.C.A., and other agencies, whereby full information may be tabulated as to the whereabouts, condition, etc., of every tuberculous soldier discharged from the army or the navy, and an educational campaign inaugurated among soldiers and sailors concerning tuberculosis and its prevention. Inasmuch as enlisted or drafted men do not become accepted soldiers until after a preliminary period, lasting from three to six months, in the various services, the American Government assumes no responsibility for the aftercare of those whose health breaks down during that period, and this problem, therefore, must be solved by civilian health boards and unofficial health organizations.

When the names of men dismissed from the services because they were suffering from tuberculosis have been ascertained, they are forwarded to the health boards and associations in the states in which the men reside for follow-up work; and should there be no existing facilities for this work, the efforts of the association are directed towards their establishment.

In accordance with a general policy recommended by the National Association, steps have been taken by the medical department of the American Army to weed out cases of tuberculosis, and every man now passed by the draft board after going into camp is examined by the regimental surgeon, reexamined by a tuberculosis board, and if suspected to be suffering from the disease, again examined by a expert in tuberculosis.

Since it is known that a number of men have been accepted into the services who are suffering from tuberculosis and who, in some cases, had already undergone a period of treatment in sanatoria, the association has compiled lists of all recent male patients of draft age in the various sanatoria in the country, with a history of the cases and information as to whether or not, so far as can be ascertained, the men are in the army. This information has been forwarded to the training camps and a number of these men have been traced.

The Association is also cooperating with the Government in providing sanatorium accommodation for men who have been discharged from the services during the probationary period. Whenever possible, arrangements are made for the treatment of such cases in sanatoria situated near their homes.

The educational programme of the Association includes the preparation of a number of lectures on tuberculosis and other health topics, and the distribution of a text-book on personal hygiene and of circulars and pamphlets treating of health matters. Secretaries will be placed in the army camps and will arrange for the delivery of public lectures there from time to time. A number of special tuberculosis exhibits, known as "The Parcel Post Exhibits" will be distributed through the Y.M.C.A. Dr. Pattison, the field secretary of the Association, will visit the training camps and will supervise this educational work.

The Association

THE HAMILTON MEETING

WE have received the following communication from the President-elect, Dr. H. Beaumont Small, on the subject of the annual meeting, and take pleasure in bringing it to the notice of our members.

OTTAWA, *February 14th*, 1918.

To the Members of the Association:

I take advantage of this, the earliest opportunity, to thank the Association for selecting me as President for the ensuing year. To one who has been intimately connected with the Association for so many years, to attain its highest office is an honour that is fully appreciated, and, whilst realizing my many deficiencies, I trust that I may be successful in fulfilling the duties of the office.

I also wish to direct the attention of members to this year's meeting at Hamilton. All should endeavour to add to its success by being present, if possible, and by inducing others to attend. The energy of our Hamilton confrères has gathered for the week so many societies having a common interest, that it may be termed a Medical Congress. This is the first occasion on which such an assemblage has been attempted, and, to maintain the interest of all throughout the week, it has been arranged that there will be a reciprocity of membership which will throw open the meetings of each association to members of all others.

The Local Committee is carefully preparing the programme to prevent any repetition or duplication of subjects. The addresses, discussions, and papers will be of the highest order, which, with the large attendance that must necessarily be present, will make the week one of decided benefit as well as of pleasure.

For this occasion our Association will merge its medical programme with that of the Provincial Association, but the general sessions to transact the regular and necessary business will be held as usual. At these any resolution may be introduced and the affairs of the Association fully discussed.

H. B. SMALL

PRELIMINARY PROGRAMME—COMBINED MEETING

HAMILTON, ONTARIO

Monday, May 27th, to Saturday, June 1st, 1918.

**Ontario Medical Association, Canadian Medical Association,
Canadian Association for the Prevention of Tuberculosis,
Canadian Public Health Association, Ontario
Health Officers' Association**

*Monday and Tuesday***Canadian Public Health Association and Ontario Health Officers' Association**

President's address, (Canadian Public Health Association)—
"A Plea and a plan"—W. H. Hattie, Halifax.

President's address (Ontario Health Officers' Association)—
H. W. Hill, London.

"The public health nurse"—J. A. Baudouin, Lachine.

Paper (title to be announced)—M. M. Seymour, Regina.

"Good public health service in small towns and rural municipalities"—J. J. Harper, Alliston.

"Hints on rural health administration"—J. W. S. McCullough, Toronto.

"The control of an outbreak of diphtheria"—W. C. Allison, Toronto.

"The trail of the medical vampire"—Frederick Paul.

"Health insurance"—Charles J. Hastings, Toronto.

"The venereal disease problem"—Gordon Bates, Toronto.

"Why is it worth while to establish sewerage in a small town?"
—F. A. Dallyn, Toronto.

"Interpretation of water analysis"—H. M. Lancaster, Toronto.

"Mental hygiene"—Clarence M. Hincks, Toronto.

Symposium on Child Welfare.

Chairman's address—Alan Brown, Toronto.

"Child welfare in war time"—Isaac Abt, Chicago.

"Progress in child welfare work in Europe"—Grace L. Meigs, Washington.

"The results of three years' work in the department of child hygiene, Toronto"—George Smith, Toronto.

"The medical student in his relation to infant and child welfare work"—Richard Bolt, Cleveland.

"The management of a child welfare week in small cities and towns with results"—Mary Power, Toronto.

Round table discussion and subscription luncheon

Alan Brown, chairman.

Wednesday, 9.00 a.m.

Canadian Association for the Prevention of Tuberculosis

Secretary's report—G. D. Porter, Toronto.

"The role of the health officer in the control of tuberculosis."—
H. W. Hill, London.

"Heliotherapy by the Rollier method as applied to surgical tuberculosis with lantern demonstrations"—John H. Pryor, Buffalo.

"President's address"—J. A. Machado, Ottawa.

Ontario Health Officers' Association and Canadian Public Health Association

Social and public health aspects of tuberculosis.

2.15 p.m.

Ontario Medical Association

"President's address"—John P. Morton, Hamilton.

2.30 p.m.

Canadian Association for the Prevention of Tuberculosis:

Symposium on the Diagnosis and Treatment of Tuberculosis:

Differential diagnosis—J. S. Pritchard, Battle Creek.

Sanatorium treatment—A. F. Miller, Kentville.

Artificial pneumothorax—D. C. Parfitt, Gravenhurst.

Tuberculin treatment—J. H. Elliott, Toronto.

8.00 p.m.

**Ontario Medical Association, Canadian Public Health Association
Canadian Medical Association**

General Session:

The returned soldier problem.

Thursday, 9.00 a.m.**Ontario Medical Association and Canadian Medical Association**

Meeting of Sections.

2.00 p.m. and 8.00 p.m.*General Session:*

Address in Medicine—Lewellys F. Barker, Baltimore.

Address in Surgery—Charles Mayo, Rochester.

Address in Obstetrics—(to be announced).

Address in Pediatrics—I. A. Abt, Chicago.

Address on the Ear—Isaac Jones, Philadelphia.

Friday, 9.00 a.m.**Canadian Medical Association and Ontario Medical Association**

Meeting of Sections.

2.00 p.m.*Symposium on Intra-Cranial Pressure:*

Medicine—(To be announced)

Surgery—A. E. Garrow, Montreal.

Physiology—J. J. R. Macleod, Cleveland.

8.00 p.m.

General Sessions

Saturday, 9.00 a.m.

Hamilton Clinical Day.

In the section of medicine amongst others the following have consented to take part:—L. Rowntree, Minneapolis; Alan Brown and Geo. E. Smith, Toronto; Beatrice Hinkle and W. Gordon Lyle, New York; J. Chandler Walker, Boston; and Thomas McCrae, Philadelphia. On eye, ear, nose and throat, Casey Wood, Chicago; Walter Parker, Detroit; John Wheeler, New York; Joseph Beck, Chicago; and H. Halsted, Syracuse. In surgery, Dr. McGuire, Buffalo; Dr. Hyman, St. Louis; Dr. Gawthrey, Sayre; and Dr. Henderson, Rochester.

Regarding the work in the sections, the general principle will govern in all that there will be very few papers, but it is the expectation of the Committee that each paper presented will promote a very elaborate discussion so that in a sense each will represent a symposium. The writers of the papers are asked to present a synopsis which should be ready and in the hands of the Committee before March 25th.

It is proposed to have in addition to the regular programme of sections and general sessions, an innovation in the nature of a "Round Table Discussion" on a matter of vital interest to the profession as a whole. This will be arranged for late in the day when the regular programme is finished. Accommodation will be limited and all seats reserved.

A personal conference in Ottawa with Surgeon-General Fotheringham of the Militia Department and others interested in the Returned Soldier Problem, resulted in developing the plans for the Symposium on this subject for Wednesday evening in a very satisfactory manner.

Plans are also under way for the presentation of a most interesting collection of scientific exhibits. There will be a pathological exhibit which will include a very fine collection of museum specimens from the McGill University Museum, and will be in personal charge of Dr. Maude E. Abbott, of Montreal; also an exhibit from the Babies' Hospital, of New York, of a number of specimens illustrating pneumonia in children. It is hoped also to obtain similar exhibits of equal interest from the museums of Queen's Medical College, Kingston; of Toronto University, and the Western University of London. There will be a series of demonstrations of clinical laboratory procedures, including those of special interest to the general profession, such as the Wassermann reaction, the colloidal gold functional kidney test, dark field spirochæta, and the preparation of serums and vaccines for therapeutic use.

For the *x-ray* exhibit, plates are requested to be sent in by men interested in this work. There will be a daily informal demonstration and a lantern will be available for those wishing to use it.

There will be shown daily from four to six, moving pictures on medical and surgical subjects including subjects of interest to the general practitioner.

The American Medical Association have offered the use of their charts, illustrations, and literature, relating to the propaganda for reform as carried on by that Association.

The Local Committee also wish to announce that it is their wish to carry out the programme and all entertainments with greatest respect for war conditions. While there will be no formal receptions or entertainments, this Ambitious City will go the limit of its capacity in its efforts to make the visiting members welcome, comfortable, and satisfied.

RAILWAY RATES

The usual reduced rates have been arranged on all the Canadian roads. These special rates may be obtained by doctors attending the meeting, and by members of their families accompanying them.

In order to take advantage of these rates it will be necessary for the physician when starting, first, to purchase a single first-class ticket (which must cost not less than 50c.) to place of meeting, and second to obtain from his ticket agent a standard certificate properly filled in and signed by the latter. This must be presented to the General Secretary of the Association when registering at the meeting. It will be filled in by him and viséd by a special agent of the transportation companies, who will attend for this purpose and who will collect the sum of 25c. for each certificate examined. The presentation of this form properly filled in and viséd will entitle the holder to a return ticket to his home either free of charge or at two thirds, or one third, the regular first-class fare, depending on the number attending the meeting.

From points east of Fort William, Ontario, tickets must be bought between May 23rd and May 29th, inclusive, and the return journey may be made up to and including June 5th, 1918. From points West of Fort William, and Armstrong, Ontario, tickets must be bought between May 22nd and 25th, inclusive; from British Columbia between May 19th and 22nd, inclusive. Certificates for the return journey to the west will be honoured at Hamilton up to and including June 5th. A thirty-days' extension may be secured by the additional payment of one third the full fare from place of meeting to starting point. Stop-overs will be granted holders of these extended tickets.

We would point out to our members that the above special rates apply as well to the boats of the Canada Steamship Lines, as to the railways.

It is hoped that our members will note that it is important to fulfil all conditions mentioned above, and it should be emphasized that the greater the number attending, the less will be the cost of railway transportation.

Obituary

WILLIAM H. JAMIESON

THE death of Dr. Jamieson, of Montreal, which occurred at the Royal Victoria Hospital on January 24th, after a brief illness, came as a shock to his many friends. A member of the class of 1893 McGill, Dr. Jamieson soon after graduation decided to take up special work in the ear, nose and throat, and for this purpose went to London and some of the large European centres where he remained for upwards of two years perfecting his knowledge in these branches. On his return to Montreal he was appointed to the staff of the Royal Victoria Hospital and also became a demonstrator of oto-laryngology in McGill University. At the time of his death he had attained the rank of lecturer. He will be greatly missed by a host of friends in university, hospital, and military circles, in each of which he held an important position.

DR. WILLIAM D. YOUNG

A NOTICE of the death of Dr. Young, which occurred on January 4th, was published in our last issue. During a life of earnest self-sacrifice and service, Dr. Young won the love and admiration of those amongst whom he lived and to whom he ministered, and his never-failing response to the cry of pain, be it from rich or poor, and his unswerving devotion to the call of duty have left a memory that the citizens of the Beaches, Toronto, wish to perpetuate. It is thought that the most fitting memorial to Dr. Young would be something that would be an expression of "service", the dominant note of his life, and it is probable that it will take the form of a drinking fountain, which it is proposed to place in Kew Beach Park.

CAPTAIN JOHN F. PALLING, C.A.M.C.

CAPTAIN JOHN FERGUSON PALLING died at the Queen Alexandra Military Hospital, Millbank, England, on January 31st, in his fifty-sixth year. He graduated in 1888 from Trinity College, Toronto, and was in practice at Barrie, Ontario, until February, 1916, when he joined the Canadian Infantry Battalion as medical officer, going overseas the following May.

DR. AUSTIN OGDEN

DR. AUSTIN OGDEN, who recently met his death in France, was the son of the late Mr. H. H. Ogden of Sarnia. Dr. Ogden graduated from the University of Michigan and at the time the war broke out was studying in Germany. He was detained in that country for some time but was subsequently allowed to leave, whereupon he went to England and enlisted in a British regiment. He was killed in action in France.

DR. GEORGE VILLENEUVE

THE death of Dr. George Villeneuve, alienist, of Montreal, occurred at Quebec on January 21st. He was a member of the old French-Canadian family of De Lanaudiers and was born at Montreal on February 8th, 1866, was educated at the St. Sulpice College, and graduated in Medicine from Laval University in 1889. Dr. Villeneuve completed his medical studies in London and Paris and upon his return to Canada in 1894 was appointed assistant medical superintendent of the St. Jean de Dieu Asylum at Longue Pointe, Montreal. A few years later he became superintendent of the institution, which he conducted for almost a quarter of a century. In 1905, Dr. Villeneuve married Mademoiselle Jeanne Belleau, niece of Sir N. F. Belleau, K.C.M.G., the first lieutenant-governor of the province of Quebec after Confederation.

Dr. Villeneuve was well known as an alienist and was the author of a work entitled "The Insane and the Law" and other contributions to the literature on this subject. He was a member of the medical faculty of Laval University, Montreal, and a member of the Belgian and American Medico-Psychological Societies. Dr. Villeneuve saw active service during the Riel Rebellion as Captain in the 65th Battalion.

DR. CATELLIER

DR. LAURENT CATELLIER died at Quebec on January 17th, after a long illness, in the seventy-ninth year of his age. Dr. Catellier was consulting physician to the Quebec Board of Health, professor emeritus and ex-dean of the medical faculty of Laval University, and ex-surgeon of the Hotel Dieu Hospital at Quebec. He was born and educated at Quebec. After graduating with honours from

Laval University, he entered the University of Paris, where he also distinguished himself.

Dr. Catellier acted as the representative of the Quebec Government at the medical congresses of Demey in 1885, of Paris in 1900, and of Habana in 1905. He was closely connected with the Laval University for many years, as student, professor of pathology, and dean of the medical faculty, and his keen interest and sure judgement won the esteem of confrère and pupil.

MAJOR J. H. RATZ, C.A.M.C.

MAJOR RATZ, whose death occurred at Ottawa on February 11th, was assistant medical advisor to the Pensions Board; he was in the forty-ninth year of his age and had been ill for about six months. Major Ratz was born at Elmira, Ontario, in 1869. After attending the Galt High School he entered the University of Toronto, where he received the degree of B.A. in 1892, and his medical degree three years later. He practised in New Dundee, Elmira, and Trenton, and in January, 1915, gave up his practice to join the Canadian Army Medical Corps. He was appointed medical officer of the 34th Infantry Battalion with which he served for a year. He was then appointed to duty at Shorncliffe and West Sandling, and subsequently served on the Canadian Pension Board at Bath, England. On his return to Canada he was attached to the Pension Board at Ottawa as assistant medical advisor.

DR. DONTAGNE DESNOYERS died at the Sacred Heart Hospital at Sherbrooke, Quebec, on January 15th, at the age of seventy-two years. He was born at St. Jean Baptiste de Rouville and was educated at the St. Hyacinthe Seminary. His medical studies were followed in the United States and after serving for two years as hospital interne in Boston, Dr. Desnoyers returned to Canada and was appointed a member of the medical faculty of Laval University. Dr. Desnoyers, with the Canadian Zouaves, took part in the defence of Rome against the troops of Garibaldi and was taken prisoner. Upon being released he returned to Montreal where he continued to practise until about three years ago, when he became ill.

DR. ARTHUR MEEK, of Southwold, near Stratford, Ontario, died of pneumonia on January 18th, in the sixty-fourth year of his age. Dr. Meek was born at Port Stanley.

Dr. F. S. SNIDER, sheriff of Norfolk County, died at Simcoe, Ontario, on February 10th. Dr. Snider, who was born near Brandy Creek, Windham, graduated from McGill University in 1876 and practised at Simcoe, Teeterville, and Waterford. He was a member of the county council for four years and in 1898 was appointed warden of Norfolk. In 1902 Dr. Snider was elected to the provincial legislature by the Conservatives. He had been in failing health for two years but had continued his duties as sheriff of the county.

Dr. ARTHUR JOYAL, of Montreal, died of heart failure on February 5th, in the fifty-ninth year of his age. Dr. Joyal was born at Montreal and took his medical degree at Laval University in 1879. For some years he was lecturer in histology at Laval University. He then went to Paris where he studied under Pasteur and Charcot, and upon his return to Montreal devoted himself to chronic diseases of the nervous and digestive systems. He was an indefatigable worker and a keen and earnest student.

Dr. W. H. HAMILTON, of Fort William, Ontario, died in Florida at the beginning of February. Dr. Hamilton, who was in the sixty-third year of his age, was born at North Easthope, Ontario.

Dr. WILLIAM HALL CARLETON, of Toronto, died February 14th, in the sixty-fourth year of his age. He was born at Frankfort, Ontario, and graduated from the University of Toronto. Dr. Carleton had been in practice for about thirty-two years and for the past twelve years had been practising in the Thornhill district of Toronto. He had been an invalid for about a year. He is survived by his widow, one son, Dr. G. Wylie Carleton, and one daughter.

Dr. JOHN NEWTON died at Deseronto on February 13th. Dr. Newton was a graduate of Queen's Medical School and had been in practice at Deseronto for more than forty years.

Miscellany

News

MARITIME PROVINCES

THE generous offer of the Board of Governors of Acadia University to accommodate sixty pupils of the Halifax School for the Deaf has been accepted. These pupils will be given accommodation in the hospital building of the university and will have their class rooms in the Rhodes Hall. The directors of the Halifax school have thus been relieved of much anxiety. Since the explosion the students have been at their homes in various parts of the province.

PROFESSOR JOHN WEIR, assistant superintendent of the Maritime School for the Blind, recently stated that there were in the province of Nova Scotia eight hundred adult blind for whom no provision has been made either as regards accommodation or teaching.

THE smallpox situation in the provinces of New Brunswick and Nova Scotia is reported to be much improved. The number of cases is steadily decreasing and it is thought that the danger of further outbreaks is now over. A number of cases of the disease have occurred amongst the families of fishermen at Frog Pond, three miles from Tignish, in Prince Edward Island.

THE annual report of the Fredericton Board of Health draws to the attention of the city council the importance of establishing an isolation hospital with as little delay as possible. The danger of an outbreak of smallpox during the past few weeks has made it apparent that such an hospital must be established at once if the public health is to be safeguarded.

IN view of the possibility of an outbreak of smallpox in Moncton, a building has been bought by the Board of Health and has been converted into a smallpox hospital. Up to the present, however, only a few cases have been reported in Moncton.

DR. F. J. DENSMORE, of Newcastle, New Brunswick, has been appointed chairman of the County Board of Health.

THE number of cases of communicable disease reported in St. John, New Brunswick, during the past year was 342 as compared with 404 in 1916, 294 in 1915, and 356 in 1914. The cases included: diphtheria, 76 cases, 2 deaths; scarlet fever, 33 cases, 3 deaths; measles, 30 cases, 4 deaths; tuberculosis, 176 cases, 98 deaths. The number of deaths from tuberculosis is considerably greater than last year, when 63 were reported. The general death rate has steadily decreased during the past few years, the percentages being 17.89, 16.41, and 15.76 respectively for the years 1915, 1916, and 1917; the population of St. John was estimated at 49,930 in June last. The infant mortality in 1917 was 153 per 1,000, a rate which is rather higher than that of 1916, but which is accounted for by the prevalence of cholera infantum in August, September, and part of October. No particular cause for the outbreak could be discovered, but it was noted that the majority of cases occurred in bottle-fed babies.

THE tenth annual report of the Harbor View Hospital at Sydney Mines, Nova Scotia, was presented at a meeting of subscribers which took place on January 22nd. During the year 1917, 501 patients were treated in the hospital and 23 deaths occurred. The financial report showed a credit balance of \$5,013.48.

ONTARIO

A NUMBER of cases of scarlet fever of a mild form have been reported in Ottawa.

It was recently stated by Dr. R. Egerton George, health officer for the district, that in the coal dock district of Fort William, out of one hundred and eighty-eight infants born in 1917, thirty-four died within twelve months.

THE following is the list of infectious diseases reported in the province during the month of January: measles, 1,013 cases, 2 deaths; diphtheria, 394 cases, 32 deaths; scarlet fever, 337 cases, 7 deaths; whooping cough, 367 cases, 8 deaths; tuberculosis, 187 cases, 63 deaths; smallpox, 70 cases; typhoid fever, 26 cases, 7 deaths; infantile paralysis, cases, 2 deaths; cerebro-spinal meningitis, 4 cases, 2 deaths. The cases of smallpox, for the most part, occurred in the

counties of Essex, Kent, and Lambton, twenty-six being reported from Sarnia alone.

THE sum of \$30,000 has been bequeathed to the Toronto Hospital for Sick Children by the late James I. Carter, of Sarnia.

DURING the past year the following cases of infectious diseases were treated in the Queen Mary Hospital at Peterborough: scarlet fever, 18; diphtheria, 12; measles, 2; spinal meningitis, 1. Cases from outside Peterborough: diphtheria, 6; measles, 1. In future the wards in this hospital will be free to residents of Peterborough. The neighbouring townships will be invited to contribute to the maintenance of the hospital and free treatment will be accorded to residents of such as do make such contribution.

DR. DOWNHAM, who has been assistant to the medical officer of health, has been appointed inspector of public health in London.

DR. W. C. WHITE, of Pittsburgh, Pennsylvania, has been appointed chief of the bureau of tuberculosis of the American Red Cross in France. Dr. White graduated from the University of Toronto in 1901.

QUEBEC

SPEAKING at the annual meeting of the Board of Governors of the Western Hospital, Montreal, Mr. D. Lorne McGibbon, who retiring from the office of president was elected honorary president of the hospital, referred to the increasing expenses of the institution. The calamity of a closing of the doors had been averted by public generosity, but such a matter should not be left to the charity of the citizens. It was rightfully the affair of the province and of the city, and if they did not accept their portion of the responsibility now, the time would come when the whole responsibility would be thrown upon them. The report of the secretary showed that 1917 had been one of the hardest years in the existence of the hospital, the cost of maintenance, in spite of the practice of the most rigid economy, having risen from \$2.47 a day in 1916 to \$3.01 in 1917. Every bed in the hospital had been filled continuously. The treasurer stated that the deficit of \$17,436.48 had increased to \$40,324.79, chiefly through the increased cost of coal. The medical superintendent reported that 1,388 patients had been admitted to the hospital during the past year, 1,280 being residents of Montreal. Sur-

gical operations had been performed on 737 patients. In the outdoor patient department 19,649 consultations had been given, among them 10,271 surgical cases.

It was reported at the annual meeting of the Board of Governors of the Protestant Hospital for the Insane at Verdun, on February 7th, that the institution was very much overcrowded, seven hundred and seventy-one patients being at present under treatment, and that it was extremely difficult to procure the services of nurses or attendants. The financial year closed with a deficit of \$38,471.

THE fifty-second report of the Jeffrey Hale's Hospital, Quebec, was presented to the Board of Governors on February 12th, last. During the past year the James Douglas Tuberculosis Wards have been added to the institution and are now ready for occupation, their purpose being the provision of accommodation for advanced cases of the disease. A central heating plant has also been established and has been working satisfactorily during the winter. In accordance with the request of the military authorities thirty beds in the hospital have been devoted to military patients.

During the past twelve months nine hundred and one patients have received treatment in the hospital, the total number of hospital days being 17,127.

DR. J. T. WALL, of Montreal, has been elected a member of the Royal College of Surgeons.

SEVERAL cases of smallpox were reported in Joliette during January. Prompt measures, however, were taken to prevent the further spread of the disease, and the total number of cases reported in the district was about twenty-five.

THE Laval Hospital which is being built at Quebec for the treatment of cases of tuberculosis will probably be opened about May 1st. The hospital will be used as a clinic for teaching purposes by the medical faculty of Laval University and will be in charge of the Grey Nuns. Sufficient accommodation will be provided for one hundred and thirty-five persons and the treatment will be given free of charge. The hospital is built on a site overlooking the St. Charles Valley with the Laurentide Hills in the distance. Grants of

\$25,000 were made by the provincial government and also by the city of Quebec towards the establishment of the hospital, the remainder being contributed by private subscription.

MANITOBA

AN additional grant of \$58,600 has been made to the hospital board by the Winnipeg Board of Control to cover the deficits shown in last year's annual statement of the King George and King Edward Hospitals.

SASKATCHEWAN

THE new hospital at Eston was officially opened by Dr. Seymour, commissioner of public health, on January 15th, last.

A DINNER was given on February 1st by the physicians of Saskatoon in honour of Lieutenant-Colonel Andrew Croll, C.A. M.C., on the eve of his return to the front after a short leave of absence.

THE free distribution of diphtheritic anti-toxin in the province was commenced by the government last September. From then to the end of January, 1918, the following amounts have been distributed: September, cities, 2,303,000 units; rest of province, 2,707,000 units; October, cities, 1,466,000 units; rest of province, 855,000 units; November, cities, 3,594,000 units; rest of province, 1,313,000 units; December, cities, 2,616,000 units; rest of province, 1,594,000 units; January, cities, 4,776,000 units; rest of province, 2,723,000 units; total, 23,947,000 units.

RESOLUTIONS have been passed recently by the Trades and Labour Council and the Northside Ratepayers' Association of Regina in favour of the establishment of a free hospital in Regina.

THE following is the list of communicable diseases reported to the Provincial Bureau of Health during the month of December: diphtheria, 103 cases as compared with 31 cases in the same month in 1916; chicken-pox, 109 cases as compared with 83 last year; mumps, 39 cases; whooping cough, 16 cases; typhoid fever, 12 cases, as compared with 4 during the previous December; measles, 18 cases as compared with 35; cerebro-spinal meningitis, 2 cases; tuberculosis, 5 cases; smallpox, 1 case; scarlet fever, 11 cases as compared with 48 in December, 1916.

DURING the past year municipal hospitals have been established at Lloydminster, Edam, Eston, and Shaunavon; the one at Shaunavon, however, is not yet completed. The necessary by-laws have also been passed at Davidson, Rosetown, Kerrobert, and Lampman, and arrangements are being made for the establishment of municipal hospitals at these places. By-laws for the establishment of similar hospitals were submitted to the municipalities in the Estevan, Outlook and Lanigan districts but were defeated.

ALBERTA

THE building that was formerly used as the Red Deer College and was bought some months ago by the provincial government for the purpose of a home for mentally defective children, has been taken over temporarily for the accommodation of soldiers who have been mentally affected by the war. When the necessary alterations have been made to the building there will be room for about one hundred and fifty patients. At present there are about thirty soldiers in the asylum at Ponoka, which is much overcrowded; it is the intention to remove these patients to Red Deer and it is thought that their chance of recovery will be greater there than at Ponoka. The Ponoka institution is also to be enlarged.

IT has been suggested that the military sanatorium which it is proposed to establish should be built at Kananaskis, about twenty miles east of Banff, in the foothills of the Rockies, but its inaccessibility would constitute a serious objection. The estimated cost of the institution is \$400,000, half of which will be paid by the Dominion Government and the remainder by the Province. It will be built on the unit plan and will accommodate three hundred patients, and when no longer required for the treatment of soldiers will become the property of the province of Alberta for the treatment of civilian patients.

A MEETING of the Calgary Hospital was held on January 16th, when it was decided to increase the fees charged to patients from outside the city to \$1.50 a day; it was pointed out that the actual daily cost of maintenance last year averaged \$1.95 for each patient, and that this year it would in all probability be \$2.00 or more. It was also decided that patients in the general wards of the Mount View Sanatorium should be given treatment free of charge in future. The question of providing free accommodation to school children was

brought up by a deputation from the school board, and Mr. Ross, speaking on their behalf, stated that whereas three hundred and thirty-eight cases were treated last year in the school clinic, only twenty-two of them were admitted to the General Hospital. He considered that, as the General Hospital was a municipal institution, such cases should be given accommodation in preference to patients from out of the city. After some discussion it was decided that a flat rate of from \$2.50 to \$3.00 a day, which would cover the actual cost of the service, should be granted and should be chargeable to all patients whose parents could afford to pay. Another point that was discussed was the necessity for a provincial home for incurables and it was decided to appoint a committee to consider the matter. Dr. Fisher, superintendent of hospitals, stated that there were a number of cases of chronic illness in the province for which proper accommodation ought to be provided and that at that time there were eight in the General Hospital.

THE following is the text of a resolution passed by the Mount View Hospital Auxiliary, Calgary: "We, the Tuberculosis Hospital Auxiliary, are in hearty sympathy with the action taken by the hospital board in eliminating the fee from the public ward in the Mount View Hospital. The work of the auxiliary keeps in touch with the victims of tuberculosis, and also sufferers from straightened circumstances. The auxiliary finds that an important factor in effecting a cure is to relieve the patient's mind from financial worries. The auxiliary will urge the Calgary Hospital board to work towards the elimination of all hospital fees, believing that free medical attention and free hospital treatment, and also free use of the appliances, would do much to check diseases and to raise the standard of health."

BRITISH COLUMBIA

IN an address before the Vancouver Board of Trade, Dr. MacEachern, medical superintendent of the Vancouver General Hospital, stated that whereas in 1906 the number of patients treated in the hospital was about fifty a day, the average number of cases now under treatment is eight hundred, and that over five thousand meals were served in the hospital every day. The death rate, thirty-six per thousand, was as low as that of any hospital in the Dominion.

MEDICAL COLLEGES

Toronto University

MAJOR L. BRUCE ROBERTSON, C.A.M.C., who has been on active service since the beginning of the war, has been recalled by the University. Major Robertson has been attached to the staff of No. 2 Canadian Casualty Clearing Station.

THE continuance of the war has made it necessary to postpone the inauguration of the proposed six-year course in medicine until one year after peace has been declared.

Queen's University

ANNOUNCEMENT is made by the medical faculty of Queen's University that no negro students will be admitted to the study of medicine at that university in future. It has been found impracticable to give such students the necessary clinical instruction. Arrangements will be made for the transfer to other schools of the fourteen students at present in the faculty.

Western University

THE Western University Hospital Unit (No. 10 Canadian General Hospital) is now stationed "somewhere in France". The unit left England on December 24th under the command of Lieutenant-Colonel Seaborn, and Christmas Day was therefore the first day spent in France.

IN view of the serious strain imposed on the profession by the war, the Board of Governors of the University have decided to admit women to the study of medicine in future.

ARMY MEDICAL SERVICE

THE following members of the Canadian medical services have been brought to the notice of the Secretary of State for War for valuable services rendered:

Brigadier-General E. C. Ashton, C.M.G., of Brantford, who went overseas as O.C. of the 36th Battalion. He was subsequently appointed Colonel in the Reserve Infantry Brigade, Divisional Commander at Shorncliffe, and Commanding Officer and Brigadier-

General of the Fifth Division, Canadians. General Ashton is now Acting Adjutant-General at Ottawa.

Colonels Kenneth Cameron, C.M.G., and F. G. Finley, C.M.G., of Montreal; Colonel G. S. Rennie, C.M.G., of Hamilton, A.D.M.S. of the Shorncliffe area.

Colonel Wallace A. Scott, C.M.G., who is a member of the medical staff of Toronto University. Colonel Scott went overseas with No. 2 Canadian General Hospital and is at present Officer in Command of the Moore Barracks Hospital in England.

Colonel W. L. Watt, C.M.G., of Winnipeg.

THE Military Cross has been awarded to the following:

CAPTAIN AUSTIN IRVINE, C.A.M.C., of Montreal. Captain Irvine went overseas as medical officer of the Grenadier Guards. At the request of the French Government, he was transferred to duty at a base hospital near Paris. Captain Irvine is a graduate of McGill University and was on the staff of the Western Hospital, Montreal.

CAPTAIN GEORGE C. ANGLIN, C.A.M.C., of Toronto, who has been on active service for three years.

CAPTAIN HENRY CLARKE DAVIS, C.A.M.C.

CAPTAIN JAMES F. STEWART MARSHALL, C.A.M.C.

CAPTAIN THOMAS WILLIAMSON MOORE, C.A.M.C.

CAPTAIN J. MACNEILL, C.A.M.C.

CAPTAIN HENRY FREDERICK PRESTON, C.A.M.C.

CAPTAIN ERNEST C. WHITEHOUSE, C.A.M.C.

THE bar to the Military Medal has been awarded to Sergeant C. Speller, R.A.M.C., of Nutana.

THE Distinguished Conduct Medal has been awarded to Sergeant E. Bickby, C.A.M.C., who attended to the wounded continuously for thirty-six hours.

DR. D. A. CRAIG, medical superintendent of the Byron Sanatorium at London, Ontario, has been appointed military expert in tuberculosis by the Department of Militia, with headquarters at London, Ontario.

No. 1 Canadian Stationary Hospital recently returned from Salonica, has been posted to Hastings and is now designated No. 13 Canadian General Hospital. Lieutenant-Colonel E. J.

Williams, D.S.O., is commanding officer with Major J. Guy Johnson, of Montreal, in command. Major W. Hutchinson, of Montreal, is attached to the Surgical Division and is in charge of the Special Section.

LIEUTENANT-COLONEL A. J. MACKENZIE, C.A.M.C., of Toronto, is in charge of the medical department of the Granville Special Canadian Hospital at Buxton, England.

COLONEL D. G. FARMER, C.A.M.C., of Wentworth, Ontario, has been appointed Officer Commanding the Canadian General Hospital at Liverpool, England.

CAPTAIN C. G. COX, of Regina, is the medical officer of the 77th depot battery.

CAPTAIN GREGOIRE LONGAULT, of Regina, is the medical officer of the 22nd Cavalry Ambulance.

CAPTAIN A. C. ARMSTRONG, M.C., C.A.M.C., medical officer of the Ross Military Hospital at Regina, has been elected a Fellow of the Royal Institute of Public Health of London. Both the Military Cross and the *Croix de Guerre* have been conferred upon Captain Armstrong for services at the front.

DR. EARL SMITH, of Woodstock, Ontario, has joined the 13th Field Ambulance.

THE Military Hospitals Commission has purchased the National Cash Register Company's factory in Toronto with the intention of converting it into a convalescent hospital. The buildings as at present constituted are capable of providing accommodation for about four hundred patients, and plans are in course of preparation for the addition of two storeys which will increase this accommodation to between eight and nine hundred beds.

THE following have been promoted to be temporary Captains in the Canadian Army Medical Corps: Temporary Lieutenants E. McK. Shorley, E. W. Nolan, E. C. Mick, R. K. Johnston, D. R. Fletcher, G. F. Denyes, N. D. Black, J. P. Bonfield, W. C. Page, F. A. O'Reilly, C. B. Corbett, J. E. Fraser, W. W. McKay, F. L.

Reid, E. J. Gordon, W. G. Robertson, B. Lyon, C. M. Sellery, G. L. Sills, J. R. Patterson, B. W. Cannon, H. R. Nicklin, G. S. Purvis, J. M. Clark, G. K. Shirton, J. S. Sutherland, E. H. Whelpley, F. C. Wilson, P. J. O'Dwyer, M. MacKay, T. H. Williams, T. D. Wheeler, C. W. Burns, C. W. Torrance, A. M. Jeffrey, W. E. Brown, H. A. Elliot, H. A. Mitchell, F. G. Banting, G. M. Dobbin, J. S. Douglas, C. D. Farquharson, D. G. Findlay, C. E. Frain, A. R. Hagerman, C. V. Mills, C. S. Macdougall, R. MacKinlay, A. Montgomery, G. R. Scott, W. E. L. Sparks, F. McN. Johnson, W. W. Barraclough, T. W. Bleakley, R. M. Harvie, N. O. Thomas, F. S. Parney, J. F. Adams, H. C. McAllister, W. G. Jamieson, E. D. Hutchinson, D. I. Davis, T. E. White, M. G. Graham, A. MacKay, F. W. W. Hipwell, G. D. Jeffs, D. St.-C. Campbell, J. D. G. Campbell, J. A. Davies, D. W. N. Gwicker, W. M. MacDonald, K. G. Mahabir.

CASUALTIES

Killed in Action

DR. AUSTIN OGDEN, of Sarnia, Ontario. (Dr. Ogden was in the combatant forces.)

Died on Service

CAPTAIN JOHN F. PALLING, C.A.M.C., of Barrie, Ontario.

Wounded

CAPTAIN H. A. COCHRANE, C.A.M.C.

Canadian Literature

ORIGINAL CONTRIBUTIONS

Canadian Practitioner and Review, January, 1918:

Recent advances in the operative treatment of certain intracranial conditions and especially brain injuries . . .

W. Sharpe.

Dominion Medical Monthly, January, 1918:

The treatment of leukorrhea with lactic acid bacilli . . .

F. B. Block and T. H. Llewellyn.

The Public Health Journal, January, 1918:

Notes on the housing problem in England with some lessons for Canada	F. A. Dallyn.
Pasteurization of milk supply	J. A. Baudouin.
Control of venereal disease	E. H. Marsh.

Le Bulletin Médical, January, 1918:

Pneumonie infantile	Jobin.
Traitement de la furunculose et de l'acné par les autovaccins antistaphylococciques	A. Vallée and R. Potvin.
Inspection médicale des écoles	T. Savary.
Quelques observations sur le traitement de épididymite blennorrhagique par le Dmégon	Dr. Dubois.
Essais de vaccinothérapie anti-gonococcique à l'aide du vaccine Nicolle-Blaizot	L. Moreau.

Book Reviews

THE FUNDUS OCULI OF BIRDS, ESPECIALLY AS VIEWED BY THE OPHTHALMOSCOPE: A STUDY IN COMPARATIVE ANATOMY AND PHYSIOLOGY. BY CASEY ALBERT WOOD. Illustrated by 145 drawings in the text; also sixty-one coloured paintings, prepared for this work by Arthur W. Head, F.Z.S. Chicago: The Lakeside Press, 1917.

In reviewing this handsome folio, one is impressed at the outset by the fact that its purely mechanical features have been made to conform to the exacting ideals of the author, who, famous as a book-lover and producer of books, possesses as an ophthalmologist an exact knowledge of the physiological requirements of the eye. Throughout the volume spaced lines of sharply-defined type are perfectly impressed upon dulled sheets of straw paper. A sense of pure physical enjoyment is imparted by the excellence of the book in this respect. The numerous line drawings are as satisfactory as the type, and the coloured paintings will rank among the finest

ophthalmological illustrations. A commendable feature is the convenient juxtaposition of the pictures to the accompanying descriptions. Typographical errors are few and unimportant, and the binding is good.

The main purpose of the study, in the words of the author, is to furnish such a description of the intraocular appearances and the methods employed in viewing them as will enable other ophthalmologists and zoologists to further this study by examining the eye-grounds of birds that come under their observation.

To this end, the author gives in detail methods of collecting, selecting, and preparing material; reviews the anatomy and physiology of the organs and tissues seen in the fundus oculi of the bird; and describes the ophthalmoscope and its use, especially in the examination of birds. Then follows a detailed description of the ophthalmoscopic and macroscopic appearance of the fundus oculi of some representative of practically all the orders of birds, embodying wide studies of many years' duration. Other chapters are devoted to the classification of the ocular fundi of birds; the ocular fundus of birds in its relation to a classification of Aves; and the relation of reptilian to avian fundi. Finally, sixty-six splendid coloured illustrations, prepared for the author by Mr. Arthur W. Head, F.Z.S., already well known for similar work in connexion with the eyes of animals, complete the volume.

Most important among Dr. Wood's conclusions, which are conveniently placed at the beginning of the book, is the statement that, because the appearances in the fundi of birds are so constantly characteristic, it is frequently possible to recognize a given species by the ophthalmoscope alone. This means valuable additional aid in what is often a very difficult field.

Only those who know from personal experience the labour involved in obtaining an intimate knowledge of our bird neighbours, and in particular the unfailing patience required in the ophthalmoscopic examination of wild creatures, can fully appreciate the magnitude of the task accomplished. Dr. Wood is to be heartily congratulated on this splendid investigation in what is practically a virgin field of pure science.

Books Received

THE following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

GREEN'S MANUAL OF PATHOLOGY AND MORBID ANATOMY. Twelfth edition, 590 pages, revised and enlarged by W. CECIL BOSANQUET, M.A, M.D., F.R.C.P., assistant physician to Charing Cross Hospital and to the Brompton Hospital for Consumption and Diseases of the Chest, and W. W. C. TOPLEY, M.B., B.C. (CANTAB.), M.R.C.P., bacteriologist and clinical pathologist to Charing Cross Hospital. University series. Price 18/- net. Publishers: Baillière, Tindall & Cox, 8 Henrietta Street, Covent Garden, London, 1918.

MANUAL OF MEDICINE. By THOMAS KIRKPATRICK MONRO, M.A., M.D., fellow of the Royal Faculty of Physicians and Surgeons, Glasgow. Fourth edition, 1019 pages. University series. Price 18/- net. Publishers: Baillière, Tindall & Cox, 8 Henrietta Street, Covent Garden, London, 1918.

AN INTERNATIONAL SYSTEM OF OPHTHALMIC PRACTICE. Edited by WALTER P. LYLE, A.M., M.D. **MEDICAL OPHTHALMOLOGY.** By ARNOLD KNAPP, M.D., professor of ophthalmology, Columbia University. 480 pages, with 32 illustrations. Price \$4.00 net. Publishers: P. Blakiston's Son & Co., 1012 Walnut Street, Philadelphia, 1918.

BLOOD TRANSFUSION HÆMORRHAGE AND THE ANÆMIAS. By BERTRAM M. BERNHEIM, A. B., M.D., F.A.C.G., instructor in clinical surgery, The Johns Hopkins University. 247 pages. Price \$4.00. Publishers: J. B. Lippincott Company, Philadelphia, London, and Montreal, 1917.

A HISTORY OF NO. 7 (QUEEN'S) CANADIAN GENERAL HOSPITAL, March 26th, 1915—November 15th, 1917. This book is dedicated to JAMES DOUGLAS, LL.D., chancellor of Queen's University.

THE VENEREAL DISEASE PROBLEM. A Book More Especially for Nurses and Midwives. By J. K. WATSON, M.D., author of "A Handbook for Nurses", etc. Price 2/6 net. Publishers: Baillière, Tindall & Cox, 8 Henrietta Street, Covent Garden, London, 1917.

MEMORANDA ON ARMY GENERAL HOSPITAL ADMINISTRATION. By Various Authors. Edited by P. MITCHELL, M.D., Lieutenant-Colonel R.A.M.C., officer commanding No. 43 General Hospital. Price 5/- net. Publishers Baillière, Tindall & Cox, 8 Henrietta Street, Covent Garden, London, 1917.

DISEASES OF THE SKIN THEIR PATHOLOGY AND TREATMENT. By MILTON B. HARTZELL, A.M., M.D., LL.D., professor of dermatology in the University of Pennsylvania. 725 pages with 21 coloured plates and 242 cuts. Price \$7.00. Publishers: J. B. Lippincott Company, Philadelphia, London, and Montreal, 1917.

THE PRACTICAL MEDICINE SERIES. Comprising ten volumes of the Year's Progress in Medicine and Surgery. Under the general editorial charge of CHARLES L. MIX, A.M., M.D., professor of physical diagnosis in the Northwestern University Medical School. **VOLUME VII, OBSTETRICS.** Edited by JOSEPH B. DE LEE, A.M., M.D., professor of obstetrics Northwestern University Medical School, and others. Price \$1.25. **VOLUME VIII, PHARMACOLOGY AND THERAPEUTICS.** Edited by BERNARD FANTUS, M.S., M.D., associate professor of medicine, Rush Medical College, Chicago. **PREVENTIVE MEDICINE.** Edited by A. A. EVANS, M.S., LL.D., P.H.D., professor of preventive medicine Northwestern University Medical School. Series 1917. Price \$1.50. Chicago: The Year Book Publishers, 608 South Dearborn Street.

· Medical Societies

MONTREAL MEDICO-CHIRURGICAL SOCIETY

THE fourth regular meeting of the Society was held on Friday November 16th, 1917, Dr. A. E. Garrow, president, in the chair.

PATHOLOGICAL SPECIMENS: Series by Dr. Maude E. Abbott, who remarked as follows:

The specimens I am about to demonstrate were presented to the McGill Medical Museum by a recent graduate, Dr. Alton Goldbloom, now of the Boston Floating Hospital, to whose initiative and enthusiasm we are much indebted for a most valuable collection, unsurpassed both in brilliancy of colour preservation and in pathological interest. The collection consists of the intestines from a series of cases of acute enteritis in children, and also the lungs from two cases of exceptional interest of pulmonary disease in infants.

The microscopic appearances in these two last named specimens, which I now show on the epidiascope, form an interesting comparative study of the histological changes in syphilis and tuberculosis respectively. In the syphilitic slide the inflammatory reaction is of a markedly productive character with the formation of a vascularized granulation tissue which progresses from the blood vessels, very rich in plasma cells and other polynuclear elements, with few giant cells and relatively little caseation. In the tuberculous lung, on the other hand, we see an acute necrosing process, large caseating areas destitute of blood vessels containing both epitheloid and giant cells, and surrounded by a zone of lymphocytic invasion and a deeply congested periphery. Spirochaetes are seen stained by the Levaditi method in the syphilitic lung and no tubercle bacilli, but the latter are present in great numbers in the slide of caseous pneumonia, stained by carbol-fuchsin.

The series of acute enteritis is of interest, both in the types of disease represented, which include acute catarrhal, ulcerative and membranous forms, and also from the clinical standpoint in regard to the development of acidosis, which Dr. Goldbloom tells me is being investigated there in all cases of infantile diarrhoea by the estimation of the CO_2 tension of the alveolar air and the alkaline reserve of the plasma by the Mariott apparatus. He writes: "The study of the respiratory changes in diarrhoeal cases is most fascinating. There are two types, it seems, of acidosis; one which is caused by the ketone bodies, the result of the starvation and the inability of the inflamed bowel to utilize carbohydrate,—this is seen mainly in the so-called infection cases. CO_2 in these cases may be quite low, but seldom below 22 or 25 mm. There is another condition, however, not infectious but fermental, characterized by a profuse watery diarrhoea with marked dessication, where much more severe grades of acidosis are seen, with CO_2 tension as low as 15 or 20 mm., needing soda intravenously, and often very fatal.

This is frankly not due to ketone bodies formation, for they will be found in the urine only in very small amounts, and there will be no acetone odour to the breath. This type of acidosis is due to the fact that owing to an excessive loss of fluid by the bowel, the kidneys attempt to conserve this by diminished excretion with the result that the acid products of metabolism are retained. It is more severe and more deadly in our experience than the other type. Frequently the diarrhoeal condition becomes a secondary consideration for the time being, the necessity of neutralizing the diminished alkalinity of the blood being so very urgent. We have therefore found the estimation of the CO_2 tension of inestimable value, and easily and quickly carried out at the bedside even on the youngest infant."

The exact details of the seven specimens, which are mounted and put on exhibition by Mr. Judah here, are as follows:

1. *Congenital syphilis of lungs of infant with multiple gummata and so-called white (syphilitic) pneumonia. Spirochaetes in tissues by Levaditi method. Tubercle bacilli absent.*

The right lung is somewhat larger than the left and is diffusely mottled with dark red areas scattered over a surface of paler fleshy tint, the whole diffusely consolidated except in a small portion along its upper border, which is airless. Its central part is occupied by one large and several smaller caseous gummata, the largest of which presents a central cavity surrounded by a thick caseating wall and extends from the upper into the middle lobe through the pleural surfaces of the two lobes which are firmly adherent to each other at this point by extension of the gummatous inflammatory tissues.

The left lung presents one large gumma with central cavitation in its upper lobe and is air-containing in about two-thirds of its extent. Its lower lobe is of a fleshy feel and pale pinkish colour and is quite airless and solid, presenting the gross appearance of the young granulation tissue characteristic of syphilitic pneumonia.

From a male infant aged six weeks, a typical congenital luetic with snuffles, fissures about the anus, pinched finger nails. Shotty adenopathy, palpable spleen and liver 3 cm. below the intercostal border, superficial ulcers in buttocks. Full term. Breast fed. Clear history of luetic infection in father thirteen years previously. Admitted to hospital with diarrhoea and complaint of failure to gain weight and grow. The infant never coughed, probably owing to extreme weakness, and physical examination of chest was negative, so that no pulmonary lesion was suspected. Failed to rally

and wasted away in a week. Wassermann reaction was positive and von Pirquet negative.

Microscopical examination showed the lung largely obliterated by a cellular granulation tissue, rich in plasma cells and other polyblasts, partly vascularized, interchanging with areas of fibroplastic and mature fibrous tissue, especially well developed around and progressing from blood vessels. Small tubercle-like, mostly fibroid, nodules are also numerous. Caseation is generally absent, although tendency to necrosis and some actual necrosis of tissue is to be noted. In earlier places distinct cellular fibrous inter-alveolar thickening occurs. The whole sufficiently characteristic of the syphilitic process to enable the diagnosis to be made. (Entry No. 6062.)

2. *Acute disseminated caseous tuberculosis of lungs of infant with acute tuberculous pleurisy and extensive caseation in mediastinal and peribronchial lymphatic glands, and extension through lymphatics to pleura and outer surface of pericardium. Anomalous lobulation.*

Both lungs with the trachea, bronchi, pericardial sac, and mediastinal glands attached, carefully dissected to show the mediastinal structures. The heart has been removed and the interior of the pericardial sac exposed. The left lung has but one lobe and the right a very rudimentary division.

A large mass of densely caseating and enlarged glands, most of which are discrete from each other, are grouped about the arch of the aorta just above the pericardium and encircling the anterior surface and right side of the trachea and its bifurcation. Seen from the front these glands form a continuous chain of coronal shape running from the root of the right to that of the left lung, being larger and more numerous on the left side where the outer surface of the pericardium is seen to be involved, and a series of delicate lymphatics run from the lower glands of the chain to the pleural surface over the hilum of the lungs. The pleura in this neighbourhood and also over the diaphragmatic surface and over the whole right lung is the seat of an extensive yellowish exudate and numerous caseating tubercles. The posterior aspect of the specimen shows the mass of caseating glands seen from the front dipping down at the back of the hilum of the right lung, and a portion of the right parietal pleura completely covered with a tuberculous inflammatory exudate. The apex of this lung is transformed into a dense caseous mass the size of a walnut and there is extension downwards of the process by lobular foci of caseous broncho-pneumonia and an acute fibrinous pleurisy.

From a male infant aged fifteen months. History of failure to gain and loss of weight for past seven months. Cough during past three or four months, loss of appetite and listless. Dulness in right interscapular region and breath sounds increased over this area and inconstant fine crackling râles heard. Lumbar puncture showed increased pressure, 150 cells and tubercle bacilli. Cerebro-spinal signs came on after the child had been ten days in hospital.

The post-mortem showed the lungs as above, also tuberculous meningitis, miliary tuberculosis of liver and spleen and kidney, but none of mesenteric lymph nodes or peritoneum. Horseshoe kidney. Both lungs were left attached to the mediastinum in order to show the relationship of tuberculous peritoneal lymph nodes to the main tuberculous process. Note the advanced lesion at the apex of the right lung which was noted as somewhat unusual in a child of this age. (Entry No. 6262.)

3. *Horseshoe kidney and spleen of anomalous shape, the seat of acute miliary tuberculosis.* (From the preceding case.)

4. *Small intestine. Death from acute intestinal indigestion of infancy, with acute intoxication.*

A piece of jejunum showing marked injection of follicles which project from the mucosa as bright red areas.

From an exclusively breast fed infant with an acute attack of diarrhoea, no pus or blood. No vomiting. Physician's examination negative. Diarrhoea very watery. Child did not rally. Diagnosis—acute intestinal indigestion. Parenchymatous degeneration of kidneys; fatty infiltration of liver. (Entry No. 6261.)

5. *Acute ulcerative ileo-colitis of infancy.* (Infectious diarrhoea, bacillary dysentery.)

The colon, appendix, and portion of ileum, showing cedematous mucous membrane, intense injection of mucosa with pin-point areas of denuded endothelium diffusely scattered through large and small intestine. Ulcers are not of follicular type, but are rather irregular areas where the endothelium has been eroded. Some appear as chinks and streaks or triangular cuts in the mucosa, others as shallow punched-out, pin-head sized cavities. No pseudo membrane has been formed.

From a female infant aged nine months. Onset one week before admission, diarrhoea with pus and blood, eight to nine movements per day. Prostrated. Markedly dessicated. Survived about one week after admission. Extremely toxic. Had a great deal of tenesmus. No clinical evidence of acidosis. Parenchymatous degeneration of kidneys. (Entry No. 6263.)

6. *Acute ulcerative ileo-colitis in infancy.*

A small piece of jejunum from the preceding case about four feet above the ileo-cæcal valve to show the abrupt commencement of the dysenteric lesion, which was continuous from that point down to the rectum as shown in specimen No. 5. (Entry No. 6263.)

7. *Acute membranous ileo-colitis of infancy* (probably the most fatal form of infantile diarrhoea known).

A portion of ileum, cæcum, colon and a piece of sigmoid from a young child; mounted in three strips.

The whole of the large bowel and the greater portion of the ileum shows an active inflammatory process with congestion and thickening in the mucosa, which is the seat of the patchy adherent membrane. These changes are most marked in the cæcum and lower part of colon and sigmoid. The ileum for about 12 cm. above the ileo-cæcal valve is relatively free from disease, the area in its immediate neighbourhood is intensely involved.

History of severe diarrhoea six days. Pus and blood in stools. CO₂ tension alveolar air 30 mm., white blood cells, 20,000. Convulsions on admission which continued intermittently until death. Spinal tap negative. Stools between eight and thirteen per day with blood and pus.

At post mortem the process was seen to be most marked in the large bowel which was œdematous with patches of active congestion and was throughout the seat of a putrid inflammation, covered with pus and lymph exudate. Parenchymatous degeneration of kidneys and fatty infiltration of liver. (Entry No. 6259.)

DISCUSSION: Dr. F. M. Fry: I am sure we all wish to thank Dr. Abbott and Dr. Goldbloom for giving us such a wonderfully clear exhibition of diseases in infants. I do not see that any discussion is necessary but I would like to express our gratification and thanks for the privilege of seeing such an excellent series.

DEMONSTRATION: by Dr. A. Bramley-Moore of the different charts used by the military authorities in various countries for the eyesight tests for military service. Dr. Bramley-Moore explained the various charts used together with the standards required for the different units of the army.

PAPER: The paper of the evening was given by Dr. R. H. Craig on, "A brief reference to the static labyrinth and its importance to aviators," illustrated by charts and diagrams.

DISCUSSION: Dr. D. H. Ballou: I congratulate Dr. Craig on his most interesting paper. This is a subject that has interested me very much and I read a paper on these tests at the annual meeting of the Canadian Medical Association in St. John, N.B.,

in July, 1914. The man who had done more than any other on this subject is Barany who has been awarded the Nobel Prize for his researches. Dr. Craig in his paper presents a subject of tremendous possibilities. I would like to mention that Menière was the man who discovered that the semicircular canals had to do with dizziness, it was about 1870, in a case of hæmorrhage of the labyrinth that died, corroborated by post mortem examination. Barany is the man who put this whole subject on a practical basis. In 1905 it was he who discovered the caloric reaction, which is the most delicate test we have for the examination of the labyrinth and the cerebellum. You do not always require a turning chair, it is only in doubtful cases that you ought to supplement the caloric reaction by the chair. In five minutes you get all the reactions for the inner ear and the cerebellum with the caloric reaction. Say for instance, the right ear is syringed with cold water, every person with a normal labyrinth will have a rotary nystagmus away from the syringed ear and the pointing test is opposite to the nystagmus. The pointing test, which was also discovered by Barany in 1909, is for the examination of the cerebellum.

Dr. Bramley-Moore: In connexion with the examination of possible aviators here, I may say that it is merely superficial, the final examination is carried on in Toronto. Here the tests are only just preliminary ones, the whispering voice at twenty feet, colour vision, urine and blood pressure. All the finer examinations are made in Toronto.

Dr. R. A. Kerry: The history of the development of these extraordinary organs, the functions of which Dr. Craig has so instructively discussed, is of unusual interest, furnishing as it does one of the best examples of adaptation of a primitive sense to special purposes. Creatures at about the same stage of development as *amœba*, are endowed with what Bounier terms a *baroesthesia*, that is, they can distinguish changes of pressure, usually more or less periodic, in the medium in which they live. This power, which may be termed a sense of "touch at a distance", enables the animal to get its food, to detect the presence of an enemy, and to some extent to determine its position relative to its surroundings. At a higher stage of evolution *papillæ* of *neuro-epithelium* are found on the surface which are specially sensitive to changes in pressure, and a little higher still we find the *papillæ* withdrawn into pits on the skin, the effects of this modification being to deny expansion to the pressure waves after they have entered the pits and so intensify their action on the *papillæ*. In the *medusæ* a most extraordinary development takes place. Some of the tentacles

on the border of the disc, lose their elasticity, bend across the epithelial pits, become calcified and form what are really primitive otoliths, suspended in contact with the papillæ. The effect of this change is to convert molecular into molar vibration; taking the formula "half the mass multiplied by the square of the velocity" as representing the work done, a comparison of the mass of even so small a body as an otolith with that of a molecule of water, gives some idea of the tremendous amplification of the stimulus.

Among the reptilia the perception of rapid changes of pressure or vibration, so highly developed in the insecta, begins to take the form of hearing and is accompanied by the formation of rudimentary cochlea, the sense of hearing being added to the more basic labyrinthine functions which still persist, both the primitive and secondary functions being brought to a greater degree of perfection in the higher orders. It is interesting to observe that hearing, as we know it, is but a development of the primitive sense of "touch at a distance" with the impulse arousing it still communicated to the nerve by an aqueous medium, and that the functions of both labyrinth and coclea depend upon changes in pressure.

The aurists have with painstaking accuracy established the effects of various labyrinthine stimuli on the movements of the eyes. Complementary work on the part of the oculist has not been fruitful. No good reason is forthcoming why a patient with failing accommodation should, in one case, have vertigo, nausea, and a host of distant symptoms, and in another none. A patient came to my office a few days ago with a condition supposed to be due to labyrinthine or cerebellar trouble. A tentative diagnosis made at the time of accommodative asthenia, seems justified by the course, but the reason why such symptoms should supervene must *faute de mieux* be set down to individuality.

Dr. R. H. Craig: In reply to Dr. Kerry I have endeavoured to show that Kubo's experiments upon sharks, and the work of Mackenzie and any other scientific observers have proved to us that the saccules and utricles are concerned with our progressive movements while the semicircular govern our turning movements.

With reference to Dr. Lauterman's enquiry, a birdman must be able to pass all the military tests plus the ear balance tests which have been carefully worked out by Barany.

In answer to Dr. Ballon, I would say that no one man is altogether responsible for the consummation of this work; it has taken almost a hundred years to develop it, and many men have contributed to the results which were finally successfully worked out in practical form by Barany.

Medical Societies

- CANADIAN MEDICAL ASSOCIATION:**—President—Dr. A. D. Blackader, Montreal. President-elect—Dr. H. B. Small, Ottawa. Acting Secretary treasurer—Dr. J. W. Scane, 836 University Street, Montreal.
- ACADEMY OF MEDICINE, TORONTO:**—President—Dr. D. J. Gibb Wishart. Secretary—Dr. J. H. Elliot, 11 Spadina Road. Treasurer—Dr. J. H. McConnell.
- ALBERTA MEDICAL ASSOCIATION:**—President—Dr. D. G. Revell, University of Alberta, Edmonton South. Secretary-treasurer—Dr. T. H. Whitelaw, Medical Officer of Health, Edmonton.
Annual Meeting, Edmonton, 1918.
- ASSOCIATION OF MEDICAL OFFICERS OF THE MILITIA:**—President—Lt.-Colonel A. T. Shillington, A.M.C., Ottawa. Secretary—Captain T. H. Leggett, A.M.C., Ottawa.
- ASSOCIATION OF MEDICAL OFFICERS OF NOVA SCOTIA:**—President—Dr. George E. DeWitt, Wolfville. Secretary—Dr. W. W. Hattie, Halifax.
- BRANT COUNTY MEDICAL SOCIETY:**—President—Dr. E. R. Secord, Brantford. Secretary—Dr. M. N. Faris.
- BRITISH COLUMBIA MEDICAL ASSOCIATION:**—President—Dr. J. Glen Campbell, Vancouver. Secretary—Dr. H. W. Riggs, Vancouver.
- CALGARY MEDICAL ASSOCIATION:**—President—Dr. H. A. Gibson. Secretary—Dr. J. W. Richardson. Treasurer—Dr. J. V. Follett.
- CANADIAN ASSOCIATION FOR THE PREVENTION OF TUBERCULOSIS:**—President—Dr. J. A. Machado, Ottawa. Secretary—Dr. George D. Porter, Ottawa.
- CANADIAN HOSPITAL ASSOCIATION:**—President—Dr. H. A. Boyce, Belleville. Secretary—Dr. J. M. E. Brown, Toronto.
- CANADIAN PUBLIC HEALTH ASSOCIATION:**—President—Dr. J. W. Hattie, Halifax, Nova Scotia. Secretary—Dr. J. G. Fitzgerald, University of Toronto.
Annual Meeting, Hamilton, May, 1918.
- CENTRAL SOUTHERN ALBERTA MEDICAL SOCIETY:**—President—Dr. J. S. Murray, Okotoks. Secretary-treasurer—Dr. G. E. Learmonth, High River.
- COLCHESTER-HANTS MEDICAL SOCIETY:**—President—Dr. J. W. T. Patton, Truro. Secretary—Dr. H. V. Kent, Truro.
- DUFFERIN MEDICAL SOCIETY:**—President—Dr. Rooney, Orangeville. Secretary—Dr. Smith, Shelburne.
- EDMONTON ACADEMY OF MEDICINE:**—President—Dr. C. U. Holmes. Secretary-treasurer—Dr. E. L. Garner. Library, 12 Credit Foncier Building.
- ELGIN COUNTY MEDICAL ASSOCIATION:**—President—Dr. F. F. McEwen, Aylmer. Secretary-treasurer—Dr. W. F. Cornett, St. Thomas.
- FRASER VALLEY MEDICAL SOCIETY:**—President—Dr. DeWolfe Smith. Secretary—Dr. D. F. Carswell.
- HALDIMAND COUNTY MEDICAL ASSOCIATION:**—President—Dr. Hopkins, Dunnville. Secretary—Dr. Courley, Cayuga, Ont.

